

The genus *Lebia* Latreille in the Australian-Papuan Region

(Insecta, Coleoptera, Carabidae, Lebiinae)

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Three species of the genus *Lebia* Latreille related to *Lebia karenia* Bates, from New Guinea and Sulawesi; ten species related to *Lebia papuensis* Macleay, from Sulawesi, New Guinea, New Ireland, New Britain, Solomon Islands, and northern Australia; one species related to *L. calycophora* Schmidt-Göbel, from northern Australia; and two peculiar species of uncertain relationships from northeastern Australia, are described as new: *L. darlingtoniana* and *L. fallaciosa*, both from New Guinea, and *L. brisbanensis* from southeastern Queensland; *L. trivittata* and *L. adusta* from Sulawesi, *L. gemina*, *L. subglabra*, and *L. permutata* from New Guinea, *L. inornata* from Salawati Island, *L. laticollis* from North Queensland, *L. atripennis* from New Ireland, *L. novabritannica* from New Britain, *L. salomona* from Bougainville Island; *L. sedlaceki* from northern Australia; and *L. foveipennis* and *L. monteithi* from northern Australia.

The synonymy of *L. papuensis* Macleay, 1876 with *L. papuella* Darlington, 1968, proposed by Moore (Moore et al. 1987) is demonstrated to be incorrect by examination of the types of both species. The synonymy of *L. papuensis* Macleay, 1876 and *L. picipennis* (Macleay, 1871) is likewise incorrect due to differences in the morphology of the male genitalia of both species. Because *L. picipennis* (Macleay, 1871) is a junior homonym of *L. picipennis* Motschulsky, 1864, the new name *L. australica* is proposed for this species. For *L. australica* a lectotype is designated.

The taxonomic status of *L. insularum* Darlington is fixed based on the examination of the male genitalia. The New Guinean species *L. cordifer* Darlington is firstly recorded from northern Australia and the male genitalia are examined and figured.

The remaining species *L. bicolor* (Sloane) and *L. melanonota* Chaudoir from Australia, and *L. barda* Darlington, *L. endynomena* Darlington, and *L. externa* Darlington, all from New Guinea, are confirmed based on the examination of types. Both Australian species are widespread and very distinctive through their conspicuous colour patterns. The New Guinean *L. endynomena* and *L. externa* are easily identified by the angulate external angle of their elytra. Hence, these four species are not mentioned further but are included in the key. Only *L. barda* is more difficult to distinguish from related species, therefore, its male genitalia are dissected and figured.

A key for all known Australian and Papuan species of the genus *Lebia* is provided.

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Introduction

In the course of determination of samples of ground beetles from New Guinea, New Britain, and New Ireland, collected by Dr. A. Riedel (Karlsruhe), A. Weigel (Pößneck), and during a canopy fogging survey carried out by O. Missa (Institut Royal des Sciences Naturelles, Bruxelles, IRSNB), a variety of species of the carabid genus *Lebia* s. l. Latreille were found of which only few species could be identified using Darlington's (1968) key to the New Guinean species. In the course of identification, additional specimens loaned from Australian National Insect Collection, Canberra (ANIC), B. P. Bishop Museum, Honolulu (BMH), Department of Primary Industries, Mareeba (DPIM), Queensland Museum, Brisbane (QMB), and South Australian Museum, Adelaide (SAMA) were included in the survey.

Although the genus *Lebia* (*sensu lato*) probably is one of the largest genera within Carabidae, in the Papuan-Australian Region it is by far less numerous than in the Oriental Region or in South America. Besides a few very characteristic species, the Papuan Region apparently is inhabited mainly by a group of small, extremely similar species that are difficult to distinguish by external morphological characters. Though even in certain conspicuous species that seemingly are easily identified, it became evident during the present survey that examination of the male genitalia is the best, in some instances even the single way, to distinguish between closely related species.

Material and methods

Altogether, about 300 specimens were available for this study of which almost 200, however, belong to the closely related New Guinean species *L. papuella* Darlington and *L. gemina*, spec. nov. and to the Australian species *L. australica*, nom. nov. Most other species either seem to be much rarer than these, or they were not yet sampled by appropriate methods. Apparently canopy fogging or beating are very successful means for collecting of *Lebia* species which in their most part seem to live on leaves and branches in the canopy of rain forest.

Due to the kindness of Dr. T. Deuve (Paris), Dr. G. A. Samuelson (Honolulu), and Mr. T. A. Weir (Canberra), I was able to compare the types of all *Lebia* species described from Australia and New Guinea except for that of *L. cordifer* Darlington which is a species well characterized by its elytral pattern, and also some types of species from adjacent areas in Southeast Asia. Species of which no additional material was available for this study, or that are sufficiently characterized in the key and are not easily mistaken, are not explicitly mentioned in this paper.

For the taxonomic treatment standard methods

were used. The male genitalia were removed from specimens soaked for a night in a jar under wet atmosphere, then cleaned for a short while in hot KOH.

For examination of the generally fine though taxonomically important punctuation and microreticulation of the surface a high quality stereo microscope with up to 64× magnification was used, supported by a lamp of high intensity giving natural light that could be focussed. For exact definition of the microsculpture such light is preferable, because fibre-glass optics substantially change the impression of the surface structures.

The habitus photographs were obtained by a digital camera using SPOT Advanced for Windows 3.5 and subsequently were worked with Corel Photo Paint 10.

Measurements were taken using a stereo microscope with an ocular micrometer. Length has been measured from apex of labrum to apex of elytra. Lengths, therefore, may slightly differ from those of other authors. Length of pronotum was measured from the most advanced part of base to the most advanced part of apex. No base/apex ratios of pronotum could be taken, because the anterior angles are evenly rounded in all species. The measurements and ratios are abbreviated in the following manner:

w/l pr width/length of prothorax
w pr/h width of prothorax/width of head
l/w el length/width of elytra
w el/pr width of elytra/width of prothorax

Characters

Although colour pattern seems very significant in the patterned species, elytral pattern and colouration may vary to some degree, or, on the other hand, may be very similar in related species. Thus, pattern is not always the best way to distinguish species. In those species that lack a distinct pattern, degree and structure of the microsculpture of the surface, in particular on head and pronotum, can be used as differentiating characters. As size and body shape also vary to a considerable degree within species, shape and structure of the male genitalia generally yield the best, in some very similar species the sole useful character for distinction of species, because the aedeagus usually is furnished with a number of sclerotized plates or teeth-like spurs, the number and location of which is very characteristic for each species.

For better comparison, however, measurements and ratios of the respective groups of related species are tabulated below.

Abbreviations of collections

ANIC Australian National Insect Collection, Canberra
BMH B. P. Bishop Museum, Honolulu
CBM Working collection M. Baehr, München
CSH Collection A. Skale, Hof
CWP Collection A. Weigel, Pößneck
DPIM Department of Primary Industries, Mareeba

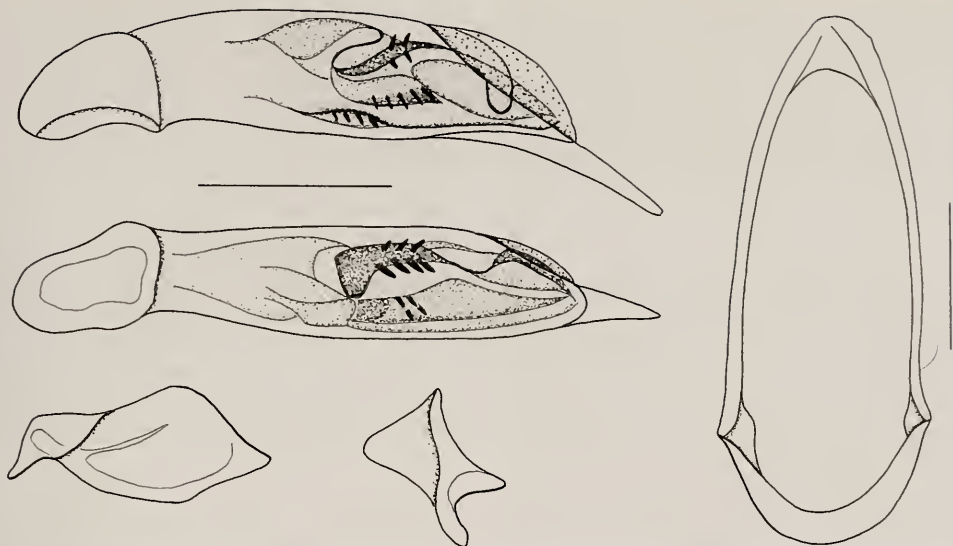


Fig. 1. *Lebia karenia* Bates. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

IRSNB Institut Royal des Sciences Naturelles, Bruxelles
 QMB Queensland Museum, Brisbane
 ZSM-CBM Zoologische Staatssammlung, München, as permanent loan in working collection M. Baehr

karenia-group

A group of rather large Oriental-Papuan species bearing a characteristic cruciate dark elytral pattern on yellow or light reddish ground. Apart from the four species mentioned in present paper, several additional species exist in South and East Asia.

Measurements and ratios see table 1.

Lebia karenia Bates

Figs 1, 22

Lebia karenia Bates, 1892: 32; Csiki 1932: 1325; Darlington 1968: 87; Lorenz 1998: 458.

Note. With respect to its apparently unique elytral pattern, *L. karenia* was recorded by Darlington (1968) for New Guinea. Careful examination of the available material from New Guinea and Sulawesi, in particular dissection of the male genitalia of all specimens, and comparison with *L. karenia* from mainland Asia revealed, however, that this species does not occur in New Guinea nor in Sulawesi, and moreover that the New Guinean specimens previously assigned to *L. karenia* belong to two different new species that are extremely similar in their external morphology (size, shape, and colour pattern), but possess quite different male genitalia. Thus, Darlington's records of *L. karenia* from New Guinea have to be neglected, and this species only occurs in India, Burma, Thailand, and perhaps also further east in mainland Southeast Asia, though apparently neither in Indonesia, nor further south.

Diagnosis. Fairly large species, with cruciate black elytral pattern that leaves an elongate subhumeral spot and the wide apical margin yellow. Apart from the differently shaped and structured aedeagus,

Table 1. Measurements and ratios of the mentioned species of the *karenia*-group.

	N	length	w/l pr	w pr/h	l/w el	w el/pr
<i>karenia</i>	3	6.2-6.8	1.53-1.56	1.22-1.26	1.45-1.54	1.63-1.69
<i>darlingtoniana</i>	8	6.75-8.1	1.51-1.59	1.16-1.22	1.37-1.41	1.78-1.91
<i>brisbanensis</i>	1	8.0	1.61	1.19	1.41	1.85
<i>fallaciosa</i>	6	6.2-7.8	1.68-1.71	1.21-1.28	1.34-1.40	1.66-1.76

further distinguished from the three new species *L. darlingtoniana*, *L. fallaciosa*, and *L. brisbanensis* by apex of black elytral spot angulate and recurved towards suture; marginal setae of elytra encircled by small, yellow spots (Fig. 21); microreticulation of elytra isodiametric; surface of head microreticulate; and surface of pronotum dull due to coarse microreticulation.

Supplementary description

Measurements (3 ex.). Length: 6.2-6.8 mm; width: 2.7-3.1 mm. Ratios: w/l pr: 1.53-1.56; w pr/h: 1.22-1.26; l/w el: 1.45-1.54; w el/pr: 1.63-1.69.

Male genitalia (Fig. 1). Genital ring elongate, barely asymmetric, rather parallel, with rather wide, convex apex and elongate basis. Aedeagus moderately slender and elongate, laterally not widened, barely sinuate, lower surface almost straight, in apical third gently concave. Apex elongate, depressed, straight, acute. Orificium moderately elongate. Folding of internal sac complex, with three patches of few sclerotized teeth at bottom, left side, and roof in middle of sac. Parameres of dissimilar shape, left paramere much larger than right one, with triangular apex; right paramere short, rhomboidal.

Distribution. Southern mainland Asia from South India to Burma, Thailand, and probably also to Laos and Vietnam.

Lebia darlingtoniana, spec. nov.

Figs 2, 23, 24

Types. Holotype: ♂, Irian Jaya, Jayapura, Sentani, Cyclops-Mt. 300-500 m, 30.10.1992, leg. A. Riedel (ZSM-CBM). – Paratypes: 1♀, Irian Jaya, Jayawijaya-Pr., Jayapura, Cyclops-Mt. 300-450 m, 8.8.1992, leg. A. Riedel (CBM); 1♂, Irian Jaya, Jayawijaya-Pr., Lereh, 300-550 m, 25.1.1995, leg. A. Riedel (CBM); 1♂, 1♀, Irian Jaya, Sorong-Pr., Batanta Isl. Waylebet, 0-100 m, 28.X.-2.XI.1996, 8.8.1992, leg. A. Riedel (CBM); 2♂♂, 4♀♀, W-PAPUA, Raja Ampat Pr. Waywesar/Batanta bor. 0°45'26"S, 130°46'55"E, 13.I.2004, leg. A. Weigel (CBM, CWP); 1♂, W-PAPUA, Raja Ampat Pr. Batanta Isl. bor. Waywesar 0°45'26"S, 130°46'55"E, 12.-15.I.2004, leg. A. Skale UWP (CSH); 1♂, Sulawesi, Donggala-Bez. Kamaroro, Lore Lindu BP. 13.-18.4.1994, leg. Hiermeier (CBM); 1♀, C-Sulawesi, Lindu NP, 45 km se. Palu, 01.12'S, 120.08'E, 900 m, 19.-29.12.1994, leg. Hiermeier (CBM); 5♂♂, 4♀♀, Coll. I.R.Sc.N.B. Sulawesi, Utara, Hogg's Back (660 m). Sweeping, 23.X.1985, Leg. J. Van Stalle (CBM, IRSNB).

Diagnosis. Fairly large species, with cruciate black elytral pattern that leaves an elongate subhumeral spot and the wide apical margin yellow, though pattern very variable: dark spot commonly reduced to an anchor-shaped spot at suture, or lateral arms

of dark pattern prolonged towards apex. Apart from differently shaped and structured aedeagus, further distinguished from *L. karenia* Bates by apex of black elytral spot oblique towards suture; marginal setae of elytra not encircled by yellow spots; microreticulation of elytra rather transverse; surface of head not microreticulate; and surface of pronotum rather glossy due to superficial microreticulation. Distinguished from *L. fallaciosa*, spec. nov. by densely denticulate sclerite within internal sac of aedeagus; apical yellow spot always touching apex; far less transverse microreticulation of surface of elytra; and narrower pronotum. Similarly patterned specimens of *L. darlingtoniana* distinguished from *L. brisbanensis*, spec. nov. by slightly narrower pronotum and denticulate band less complexly sinuate and not extending to left side.

Description

Measurements (8 ex.). Length: 6.75-8.1 mm; width: 3.25-3.8 mm. Ratios: w/l pr: 1.51-1.59; w pr/h: 1.16-1.22; l/w el: 1.37-1.41; w el/pr: 1.78-1.91.

Colour (Figs 23, 24). Fore body and lower surface, including mouth parts, antennae, and legs light reddish. Surface of elytra yellow with an anchor-shaped black spot in middle that commonly is prolonged along lateral margin to humerus and apex and then leaves an elongate humeral spot and a wide apical margin yellow. Apical margin of dark spot oblique towards suture. Lateral margin narrowly yellow, marginal setae not encircled by yellow spots.

Head. Of average size and shape, narrower than pronotum. Eyes very large, semicircular. Antennae of moderate size, surpassing basal angles of pronotum by about 2 antennomeres. Surface, except for labrum that is finely microreticulate, without microreticulation, though with some wrinkles and scattered fine punctures, glossy.

Pronotum. Moderately wide, widest at apical third. Apical angles widely rounded off, lateral margin gently convex, but faintly sinuate just in front of the rectangular basal angles. Base in middle much produced, lateral excision deep, lateral parts of base transversal, gently convex. Apex margined except in middle, base distinctly margined, lateral margin explanate towards base, marginal channel rather deep. Surface with a distinct prebasal, transverse sulcus. Surface not perceptibly microreticulate, though with rather dense and coarse transverse wrinkles and with scattered punctures, surface glossy.

Elytra. Comparatively short, somewhat oval-shaped, widest behind middle. Humeri rounded, lateral margin obliquely convex, barely incised at basal third, apex gently sinuate, apical angles wide-

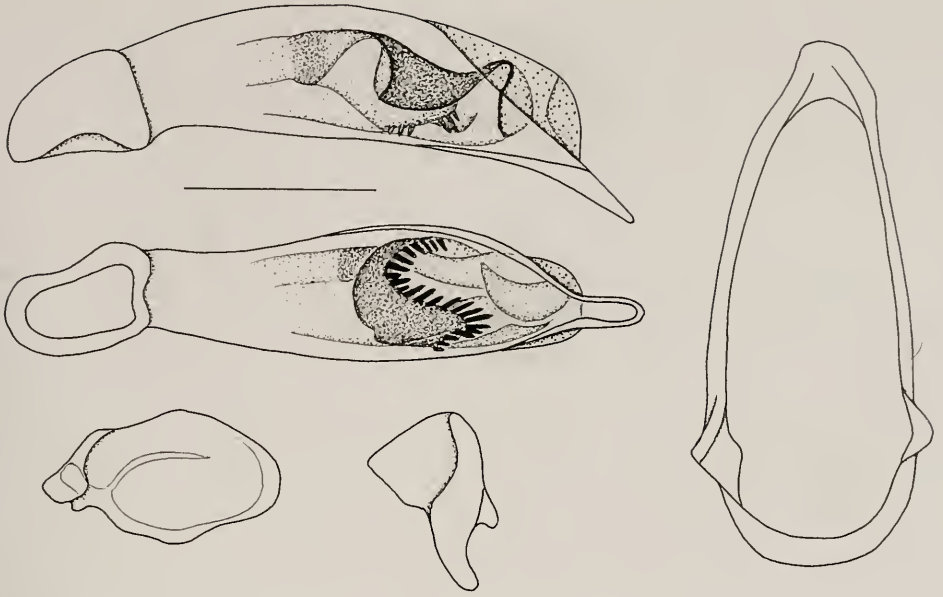


Fig. 2. *L. darlingtoniana*, spec. nov. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

ly rounded, apical margin slightly incurved at suture. Striae complete, deep, at bottom barely crenulate. Intervals convex throughout. 3rd interval bipunctate, punctures situated at 3rd stria. Series of marginal punctures not interrupted in middle. Intervals with somewhat superficial, moderately transverse microreticulation and very scattered punctures, fairly glossy. Inner wings fully developed.

Lower surface. Metepisternum elongate, almost 2× as long as wide. Abdomen punctate and pilose, pilosity denser on terminal sternite. Terminal sternite 6-setose in male, 8- or 10-setose in female.

Legs. Of moderate size. 4th tarsomeres very deeply excised. Tarsal claws with 5-6 large teeth.

Male genitalia. (Fig. 2). Genital ring elongate, barely asymmetric, rather parallel, with rather wide, convex apex and elongate basis. Aedeagus moderately elongate, distinctly widened near apex, slightly sinuate, lower surface almost straight, in apical third gently concave. Apex fairly elongate, depressed, straight, slightly spatulate. Orificium moderately elongate. Folding of internal sac complex, at bottom and at right side with characteristic, sinuate, densely denticulate sclerite. Parameres of dissimilar shape, left paramere much larger than right one, with triangular, broadly rounded apex; right paramere short, rhomboidal.

Variation (Figs 23, 24). Colour pattern of elytra varies to a considerable degree within this species,

because the black spots can be more or less extended. Both available specimens from Sulawesi are significantly smaller (length 6.75 mm and 6.95 mm) and possess wider elytra in comparison with the pronotum (ratio w el/pr 1.88 and 1.91) than the New Guinean specimens (length 7.4-8.1 mm, mean 7.7 mm, w el/pr 1.78-1.85, mean 1.825). Apparently, none of these differences are sexual. The aedeagi of the examined Sulawesi and New Guinean specimens, however, are identical. As material from Sulawesi so far is very limited, any decisions about further taxonomical differentiation between the populations from New Guinea and Sulawesi are premature and have to be postponed until additional material from Sulawesi is at hand.

Distribution. New Guinea including surrounding islands, Sulawesi.

Collecting circumstances. Largely unknown. All specimens collected at low to medium altitude.

Etymology. The name is an acronym in honour of the famous reviser of the New Guinean ground beetle fauna, the late P. J. Darlington, Jr.

Relationships. This species belongs to a group of very closely related Oriental-Papuan species. It is next related to *L. brisbanensis*, spec. nov. from south-eastern Queensland.

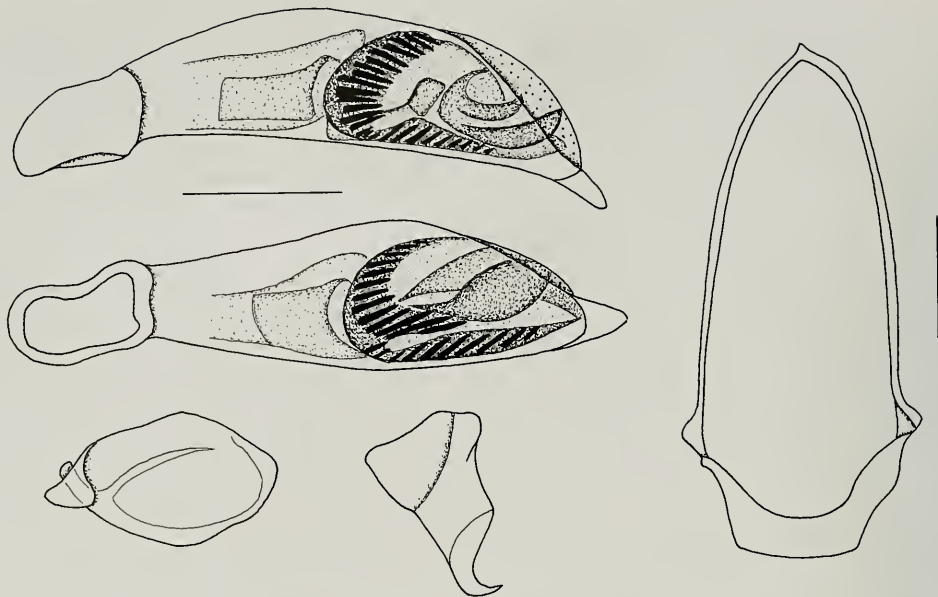


Fig. 3. *L. brisbanensis*, spec. nov. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

Lebia brisbanensis, spec. nov.

Figs 3, 25

Types. Holotype: ♂, QLD: 27°29'S × 152°47'E, Mt. Coottha, 260 m, 10 Jan 2002. M V Light, G. B. Monteith, open forest. 10330 (QMT123516).

Diagnosis. Large species, with a dark anchor-shaped spot at suture and lateral margin dark. Distinguished from *L. karenia* Bates by marginal setae of elytra not encircled by yellow spots; microreticulation of elytra rather transverse; surface of head not microreticulate; and surface of pronotum rather glossy due to superficial microreticulation. Distinguished from *L. fallaciosa*, spec. nov. by colour pattern and densely denticulate sclerite within internal sac of aedeagus. Distinguished from similarly patterned specimens of *L. darlingtonia* by slightly wider pronotum and more complexly sinuate denticulate band that is also extended to left side.

Description

Measurements (1 ex.). Length: 8.0 mm; width: 3.7 mm. Ratios: w/l pr: 1.61; w pr/h: 1.19; l/w el: 1.41; w el/pr: 1.85.

Colour (Fig. 25). Fore body and lower surface, including mouth parts, antennae, and legs light reddish. Surface of elytra yellow with an anchor-shaped black spot in middle that leaves a wide apical margin yellow. 9th interval and basal half of 8th interval black, lateral margin narrowly yellow, marginal se-

tae not encircled by yellow spots.

Head. Of average size and shape, narrower than pronotum. Eyes very large, semicircular. Antennae of moderate size, surpassing basal angles of pronotum by about 2 antennomeres. Surface, except for labrum that is finely microreticulate, without microreticulation, though with some wrinkles and scattered fine punctures, glossy.

Pronotum. Moderately wide, widest at apical third. Apical angles widely rounded off, lateral margin gently convex, but faintly sinuate just in front of the rectangular basal angles. Base in middle much produced, lateral excision deep, lateral parts of base transversal, gently convex. Apex margined except in middle, base distinctly margined, lateral margin explanate towards base, marginal channel rather deep. Surface with a distinct prebasal, transverse sulcus. Surface not perceptibly microreticulate, though with rather dense and coarse transverse wrinkles and with scattered punctures, surface glossy.

Elytra. Comparatively short, somewhat oval-shaped, widest behind middle. Humeri rounded, lateral margin obliquely convex, barely incised at basal third, apex gently sinuate, apical angles widely rounded, apical margin gently excised, slightly incurved at suture. Striae complete, deep, at bottom barely crenulate. Intervals convex throughout. 3rd interval bipunctate, punctures situated at 3rd stria. Series of marginal punctures not interrupted in mid-



Fig. 4. *L. fallaciosa*, spec. nov. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

dle. Intervals with somewhat superficial, moderately transverse microreticulation and very scattered punctures, fairly glossy. Inner wings fully developed.

Lower surface. Metepisternum elongate, almost 2× as long as wide. Abdomen punctate and pilose, pilosity denser on terminal sternite. Terminal sternite 4-setose in male.

Legs. Of moderate size. 4th tarsomeres very deeply excised. Tarsal claws with 5-6 large teeth.

Male genitalia. (Fig. 3). Genital ring elongate, slightly asymmetric, rather parallel, with narrow, triangular apex and elongate, laterally somewhat angulate basis. Aedeagus moderately elongate, distinctly widened near apex, slightly sinuate, lower surface almost straight, in apical third gently concave. Apex rather short, depressed, straight, slightly spatulate. Orificium moderately elongate. Folding of internal sac complex, with characteristic, multisinuate, densely denticulate sclerite at bottom that extends to both sides. Parameres of dissimilar shape, left paramere much larger than right one, with triangular, broadly rounded apex; right paramere short, rhomboidal.

Variation. Unknown.

Distribution. Southeastern Queensland. Known only from type locality.

Collecting circumstances. Collected at light in median altitude in open forest. Actually, the type local-

ity is within the city of Brisbane, at a locality very familiar with people as well as collectors. Hence, the discovery of a new and conspicuous lebiine at this locality is remarkable. At the same time it is very surprising why this species has not been discovered earlier and in greater numbers.

Etymology. The name refers to the type locality which is situated within the city of Brisbane.

Relationships. This species belongs to a group of very closely related Oriental-Papuan species. According to colour pattern of elytra and structure of internal sac of aedeagus, it is probably next related to *L. darlingtoniana*, spec. nov. from New Guinea.

Lebia fallaciosa, spec. nov.
Figs 4, 26

Types. Holotype: ♂, INDONESIA or. Irian Jaya, 170 km S Nabire, Epomani, 1150 m, 06.I.1996, leg. A. Weigel (ZSM-CBM). – Paratypes: 1♂, Irian Jaya, Jayapura, Sentani, Cyclops-Mts. 300 m, 9.-11.8.1991, leg. A. Riedel (CBM); 1♀, Irian Jaya, Jayawijaya-Pr., Jayapura, Cyclops-Mt. 300-450 m, 8.8.1992, leg. A. Riedel (CBM); 1♀, P.N.G., Madang Prov., Baiteta, Light AR 52, 23.V.1996, leg. O. Missa (IRSNB); 2♂♂, P.N.G., Madang Prov., Baiteta, Light AR 53, 28.V.1996, leg. O. Missa (IRSNB, CBM).

Diagnosis. Fairly large species, with cruciate black elytral pattern that leaves an elongate subhumeral

and a wide subapical spot yellow. Apart from differently shaped and structured aedeagus, further distinguished from *L. karenia* Bates by apex of black elytral spot oblique towards suture; marginal setae of elytra not encircled by yellow spots; microreticulation of elytra transverse; surface of head not microreticulate; and surface of pronotum rather glossy due to superficial microreticulation. Distinguished from *L. darlingtoniana*, spec. nov. and *L. brisbanensis*, spec. nov. by absence of any denticles within internal sac of aedeagus; apical yellow spot narrowly separated from apex; much more transverse microreticulation of surface of elytra.

Description

Measurements. Length: 6.2-7.8 mm; width: 2.85-3.75 mm. Ratios: w/l pr: 1.68-1.71; w pr/h: 1.21-1.28; l/w el: 1.34-1.40; w el/pr: 1.66-1.76.

Colour (Fig. 26). Fore body and lower surface, including mouth parts, antennae, and legs light reddish. Surface of elytra yellow with an anchor-shaped black spot in middle that is prolonged along lateral margin to humerus and along apical margin to suture, and leaves an elongate humeral spot and a wide subapical spot yellow. Apical margin of dark spot oblique towards suture. Lateral margin narrowly yellow, marginal setae not encircled by yellow spots.

Head. Of average size and shape, narrower than pronotum. Eyes very large, semicircular. Antennae of moderate size, surpassing basal angles of pronotum by about 2 antennomeres. Surface, except for labrum that is finely microreticulate, without microreticulation, though with very few wrinkles and scattered fine punctures, highly glossy.

Pronotum. Comparatively wide, widest at apical third. Apical angles widely rounded off, lateral margin gently convex, but faintly sinuate just in front of the rectangular basal angles. Base in middle much produced, lateral excision deep, lateral parts of base transversal, gently convex. Apex margined except in middle, base distinctly margined, lateral margin explanate throughout, marginal channel wide, moderately deep. Surface with a distinct prebasal, transverse sulcus. Surface without microreticulation, with rather sparse, more or less superficial transverse wrinkles and with very scattered punctures, surface highly glossy.

Elytra. Comparatively short, somewhat oval-shaped, widest behind middle. Humeri rounded, lateral margin obliquely convex, barely incised at basal third, apex gently sinuate, apical angles widely rounded, apical margin slightly incurved at suture. Striae complete, deep, at bottom barely crenulate. Intervals convex throughout. 3rd interval bipunctate, punctures situated at 3rd stria. Series of

marginal punctures not interrupted in middle. Intervals with rather superficial, markedly transverse microreticulation and very scattered punctures, glossy. Inner wings fully developed.

Lower surface. Metepisternum elongate, almost 2× as long as wide. Abdomen punctate and pilose, pilosity slightly denser on terminal sternite. Terminal sternite 4-setose in male, 6-setose in female.

Legs. Of moderate size. 4th tarsomeres very deeply excised. Tarsal claws with 4-5 large teeth.

Male genitalia (Fig. 4). Genital ring narrow and elongate, very gently asymmetric, rather parallel, with rather wide, convex apex and elongate basis. Aedeagus moderately elongate, distinctly widened in middle, rather sinuate, lower surface very gently concave throughout. Apex fairly elongate, depressed, straight, rather spatulate. Orificium moderately elongate. Folding of internal sac complex, without any denticulate sclerites. Parameres of dissimilar shape, left paramere much larger than right one, with triangular, slightly obtuse apex; right paramere short, rhomboidal.

Variation. Very little variation noted apart from some differences of size.

Distribution. New Guinea.

Collecting circumstances. Largely unknown. All specimens collected at low to medium altitude, some at light.

Etymology. The name refers to the extremely similar colouration that easily leads to confusion of this species with *L. darlingtoniana*, spec. nov.

Relationships. Probably this species is nearer related to *L. darlingtoniana*, spec. nov. than to the Oriental *L. karenia* Bates.

papuensis-group

A group of small, commonly unicolourous species of quite similar size and shape that are best distinguished by their differently structured aedeagi. Only few species from this group possess a distinct elytral pattern.

Measurements and ratios see table 2.

Lebia papuensis Macleay

Figs 5, 40

Lebia papuensis Macleay, 1876: 167; Sloane 1917: 424; Csiki 1932: 1326; Moore et al. 1987: 309; Lorenz 1998: 458.

Note. Sloane (1917) was the first to synonymize *Lebia papuensis* Macleay, 1876 with *Lebia picipennis* (Macleay, 1871) and all later authors followed him

in that synonymization. As *Lebia picipennis* (Macleay, 1871) is a junior homonym of *Lebia picipennis* Motschoulsky, 1864, the name of Macleay's species had to be changed anyway and the later name *L. papuensis* Macleay, 1876 for a New Guinean species came in very handy to the authors. Admittedly, both species are quite similar, although *L. picipennis* (Macleay) was described from central eastern Australia and *L. papuensis* Macleay from southeastern New Guinea. Examination of the male genitalia of the types of both Macleay's species revealed, however, that they are different species. Hence, the synonymization has to be invalidated and for *L. picipennis* (Macleay) a new name has to be given (see under *L. australica*).

Examined types. Holotype: ♂, *Lebia papuensis* MacL. M.S.S. Hall Sound N. Guinea/HOLOTYPE/NEW GUINEA (ANIC-MMS).

Diagnosis. Moderately large, almost unicolourous reddish species with lightly microreticulate head and densely microreticulate, rather wide pronotum; distinguished from most closely related species *L. australica*, nom. nov. by the uninterrupted, densely denticulate, transverse, sclerotized band that runs around the whole internal sac.

Supplementary description

Measurements (as the single available specimen has the elytra spread, ratios concerning width of elytra are somewhat tentative). Length: 6.2 mm; width: c. 2.9 mm. Ratios: w/l pr: 1.58; w pr/h: 1.20; l/w el: c. 1.40; w el/pr: c. 1.85.

Colour. Upper and lower surface, including

mouth parts, antennae, and legs reddish to light brown.

Head. Of average size and shape, considerably narrower than pronotum. Eyes very large, semicircular. Antennae of moderate size, surpassing basal angles of pronotum by about 3 antennomeres. Surface with fine, superficial, though distinct isodiametric microreticulation, also with few wrinkles and scattered moderately coarse punctures, fairly glossy.

Pronotum (Fig. 40). Wide, widest about at middle. Apical angles widely rounded off, lateral margin evenly gently convex, faintly sinuate in front of the rectangular basal angles. Base in middle much produced, lateral excision deep, lateral parts of base transversal, gently convex. Apex margined except in middle, base distinctly margined throughout, lateral margin explanate throughout, marginal channel widened towards base, moderately deep. Surface with a distinct prebasal transverse sulcus. Disk with very distinct, almost isodiametric microreticulation, with many distinct transverse wrinkles and with very scattered punctures, surface rather dull.

Elytra. Comparatively elongate (for group), rather oval-shaped, markedly widened towards apex, widest well behind middle. Upper surface rather convex. Humeri rounded, lateral margin obliquely convex, barely incised at basal third, apex gently sinuate, apical angles widely rounded, apical margin slightly incurved at suture. Striae complete, deep, at bottom barely crenulate. Intervals convex throughout. 3rd interval bipunctate, punctures situated at 3rd stria. Series of marginal punctures not interrupted in middle. Intervals with moderately distinct, slightly transverse microreticulation and

Table 2. Measurements and ratios of the species of the *papuensis*- and *calycophora*-groups.

	N	length	w/l pr	w pr/h	l/w el	w el/pr
<i>papuensis</i>	1	6.2	1.58	1.20	1.40	1.85
<i>australica</i>	4	4.6-5.6	1.46-1.55	1.12-1.18	1.37-1.42	1.90-1.96
<i>papuella</i>	6	4.5-5.2	1.52-1.57	1.06-1.12	1.37-1.40	1.88-1.96
<i>gemina</i>	6	4.8-6.0	1.59-1.69	1.13-1.18	1.36-1.41	1.81-1.89
<i>barda</i>	6	5.0-5.4	1.61-1.65	1.17-1.19	1.35-1.39	1.78-1.82
<i>insularum</i>	2	6.7-7.1	1.75-1.81	1.23-1.25	1.38-1.42	1.68-1.73
<i>cordifer</i>	3	5.7-6.2	1.48-1.58	1.13-1.21	1.40-1.43	1.80-1.85
<i>subglabra</i>	5	4.6-5.0	1.47-1.49	1.17-1.21	1.34-1.39	1.91-2.00
<i>novabritannica</i>	3	4.4-5.35	1.52-1.56	1.19-1.25	1.37-1.43	1.84-1.90
<i>salomona</i>	4	4.6-5.3	1.45-1.51	1.20-1.23	1.36-1.38	1.82-1.92
<i>permutata</i>	1	6.3	1.34	1.0	1.37	2.09
<i>inornata</i>	1	5.6	1.50	1.25	1.30	1.85
<i>laticollis</i>	2	4.5-4.8	1.67-1.69	1.30-1.32	1.31-1.34	1.66-1.70
<i>atripennis</i>	1	4.5	1.64	1.28	1.27	1.67
<i>trivittata</i>	6	5.0-5.7	1.38-1.46	1.16-1.21	1.35-1.41	1.90-2.00
<i>adusta</i>	2	4.2-4.3	1.43-1.44	1.20-1.21	1.35-1.37	1.92-1.93
<i>sedlaceki</i>	1	4.75	1.51	1.17	1.36	1.92

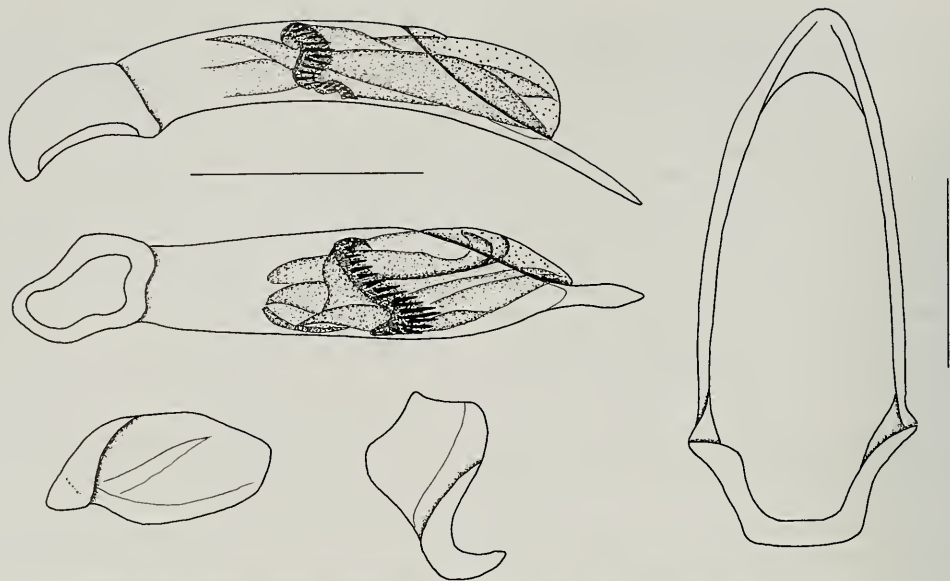


Fig. 5. *L. papuensis* Macleay. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

very fine, scattered punctures, fairly glossy. Inner wings fully developed.

Lower surface. Metepisternum elongate, almost 2× as long as wide. Abdomen punctate and sparsely pilose, pilosity slightly denser on terminal sternite. Terminal sternite 4-setose in male.

Legs. Of moderate size. 4th tarsomeres very deeply excised. Tarsal claws with 4 large teeth.

Male genitalia (Fig. 5). Genital ring large, narrow and elongate, almost symmetric, rather triangular, with narrow, obtuse apex and narrow, elongate, at tip markedly transverse basis. Aedeagus narrow and elongate, not widened in middle, barely sinuate, lower surface very gently concave. Apex elongate, depressed, straight, parallel, situated asymmetrically on right side, with triangular, arrow-shaped, acute tip. Orificium very elongate. Folding of internal sac complex, with a transverse, densely denticulate, uninterrupted, and conspicuously bisinuate sclerite running from side to side along roof and bottom of internal sac. Parameres of dissimilar shape, left paramere narrow and elongate in comparison, longer than right one, with obliquely transverse apex; right paramere short but massive, rhomboidal.

Variation. Unknown.

Distribution. New Guinea. Known only from type locality.

Collecting circumstances. Unknown.

Additional examined material. None.

Relationships. With respect to shape, surface structure, and structure of internal sac of aedeagus, most closely related to *L. australica*, nom. nov., and also, but probably slightly less so, to *L. papuella* Darlington and *L. gemina*, spec. nov.

Lebia australica, nom. nov.

Figs 6, 27, 41

Eulebia picipennis Macleay, 1871: 87 (nec *Lebia picipennis* Motschoulsky, 1864); Sloane 1907: 376.

Lebia picipennis, Sloane 1917: 424; Csiki 1932: 1326; Darlington 1968: 88; Moore et al. 1987: 309; Lorenz 1998: 458.

Note. As explained above under *Lebia papuensis* Macleay, Sloane (1917) synonymized *Lebia papuensis* Macleay and *Lebia picipennis* (Macleay). As the latter name is a junior homonym of *Lebia picipennis* Motschoulsky, 1864, the later name *L. papuensis* Macleay, 1876 was used by the all following authors. Although both species are quite similar, examination of the male genitalia of both Macleay's species revealed that they are different. Hence, the synonymization has to be invalidated and for the preoccupied *L. picipennis* (Macleay) the new name *L. australia*, spec. nov. is created.

Examined types. Lectotype (by present designation): ♀, Queensland/SYNTYPE/*Eulebia picipennis* Macl. Wide Bay (ANIC-MMS).

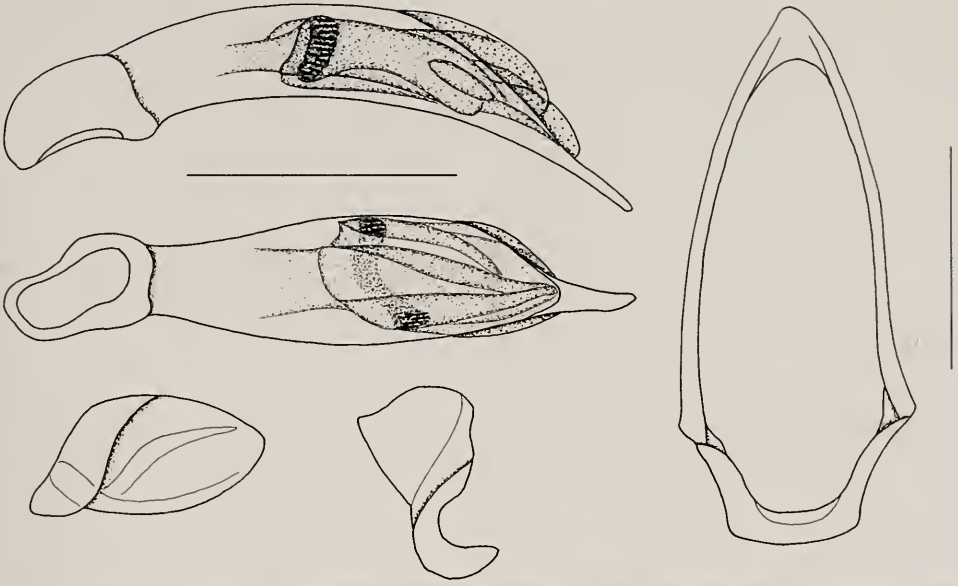


Fig. 6. *L. australica*, nom. nov. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

Diagnosis. Rather small, almost unicolourous light reddish to light brownish species with lightly microreticulate head and densely microreticulate, moderately wide pronotum; distinguished from the most closely related species *L. papuensis* Macleay by the densely denticulate, transverse, sclerotized band that runs from the side to side along the top of internal sac, but is widely interrupted at bottom.

Supplementary description

Measurements. Length: 4.6-5.6 mm; width: 2.3-2.7 mm. Ratios: w/l pr: 1.46-1.55; w pr/h: 1.12-1.18; l/w el: 1.37-1.42; w el/pr: 1.90-1.96.

Colour (Fig. 27). Upper and lower surface, including mouth parts, antennae, and legs either uniformly reddish-brown, or elytra slightly darker, brown or piceous.

Head. Of average size and shape, slightly narrower than pronotum. Eyes very large, semicircular. Antennae of moderate size, surpassing basal angles of pronotum by about 3 antennomeres. Surface with fine, very superficial, isodiametric microreticulation in middle, also with few wrinkles and scattered fine punctures, glossy.

Pronotum (Fig. 41). Comparatively narrow, widest at or slightly in front of middle. Apical angles widely rounded off, lateral margin evenly gently convex, barely sinuate in front of the rectangular basal angles. Base in middle much produced, lateral excision deep, lateral parts of base transversal, gently convex. Apex margined except in middle, base

distinctly margined, lateral margin explanate throughout, marginal channel slightly widened towards base, moderately deep. Surface with a distinct prebasal transverse sulcus. Disk with distinct, almost isodiametric microreticulation, with rather dense, fine, transverse wrinkles and with very scattered punctures, surface rather dull.

Elytra. Medium sized (for group), rather oval-shaped, markedly widened towards apex, widest well behind middle. Upper surface rather convex. Humeri rounded, lateral margin obliquely convex, barely incised at basal third, apex gently sinuate, apical angles widely rounded, apical margin slightly incurved at suture. Striae complete, deep, at bottom barely crenulate. Intervals convex throughout. 3rd interval bipunctate, punctures situated at 3rd stria. Series of marginal punctures not interrupted in middle. Intervals with distinct, moderately transverse microreticulation, barely punctate, moderately glossy. Inner wings fully developed.

Lower surface. Metepisternum elongate, almost 2× as long as wide. Abdomen punctate and sparsely pilose, pilosity slightly denser on terminal sternite. Terminal sternite 4-setose in male, 6-setose in female.

Legs. Of moderate size. 4th tarsomeres very deeply excised. Tarsal claws with 4 large teeth.

Male genitalia (Fig. 6). Genital ring large, narrow and elongate, almost symmetric, rather triangular, with narrow, obtuse apex and narrow, elongate, at tip markedly transverse basis. Aedeagus

moderately elongate, somewhat widened in middle, barely sinuate, lower surface gently concave. Apex elongate, depressed, straight, parallel, situated asymmetrically on right side, with triangular, asymmetric tip. Orificium elongate. Folding of internal sac complex, with a transverse, densely denticulate sclerite running from right side along roof of internal sac, where it is conspicuously sinuate, to left side, but is interrupted at bottom of internal sac. Parameres of dissimilar shape, left paramere rather elongate in comparison, longer than right one, with almost regular, very obtusely triangular apex; right paramere short but massive, rhomboidal.

Variation. Except for the darker colouration of the elytra in certain specimens, little variation noted, except for a single specimen that is larger than usual, has a wider pronotum, and the elytra are darker. Because it is a female, affiliation to this species cannot be verified nor denied, even when the specimen was caught together with male specimens of *L. australica*: 1♀, Qld: 27°24.1'S × 152°47.4'E, Boombana Nat. Pk. site 1. 16 Feb 2004. 440 m, QM party. 51837 (QMB).

Distribution. Eastern Queensland.

Collecting circumstances. Most specimens collected by pyrethrum fogging in rain forest or "vine scrub", a few in "flight intercept trap", single specimens at light, the old specimens do not bear any sampling records.

Etymology. The name refers to the distribution of this species in eastern Australia.

New records (55 ex.). **AUS:** 1♂ (defect, without head and pronotum), Yeppoon, Q. H.J.C. x/24/*Lebia picipennis* Macl. Id. by T. G. Sloane (ANIC); 1♀ (sex ?, abdomen destroyed), R'hamp'tn. Q. T.G.S. 10.24 (ANIC); 1 (sex ?, abdomen destroyed), Townsville, F. P. Dodd/*Eulebia picipennis* 147 (ANIC); 1♀, Byfield Q. H.J.C. 10/24 (ANIC); 1 (sex?, abdomen destroyed), *Lebia picipennis* Macl. (*Eulebia* Macl.) Id. by T. G. Sloane (ANIC); 1♀, Tamborine Mtn. QLD 4 Jan. 1981, at light, J. Powell (CBM); 5♂♂, 4♀♀, MEQ: 23°12'S × 149°44'E, Boomer Ra, Python Scrub, site 5, 29 Sep 1999, GB Monteith, 240 m. 7780 (CBM, QMB); 2♂♂, MEQ: 23°12'S × 149°46'E, Boomer Ra, Mongrel Scrub, site 7, 29, 30 Sep 1999, GB Monteith, 220 m. 7786, 7790 (QMB); 2♂♂, 4♀♀, CEQ: 22°21'S × 149°21'E, St Lawrence, 18.5 km W, 29 May 2000. GB Monteith. 240 m. 9271 (CBM, QMB); 1♂, same locality, 25 May 2000. 10070 (QMB); 2♂♂, 2♀♀, MEQ: 21°35'S × 149°11'E, Cameron Creek, upper, 100 m. 21 Oct 1999. GB Monteith. 7793 (QMB); 2♀♀, SEQ: 28°31'S × 152°44'E, Camerons Scrub, gully, 13 Jan-16 May 1999. GB Monteith. 50 m. 7667 (QMB); 1♂, 1♀, QLD: 23°30'S × 150°34'E, Mt Archer, 0.5 km WNW, 24 Mar 2001. 520 m. GB Monteith. 10057 (QMB); 2♂♂, 1♀, SEQ: 27°30'S × 152°35'E, The Knobby, via Glamogan Vale,

240 m, 16 Sept 1998, G. Monteith & P. Bouchard. 7247 (QMB); 1♀, SEQ: 27°36'S × 153°13'E, Mt. Cotton, upper gully, 7 May 1998, 150 m. G. Monteith & G. Thompson. 5816 (QMB); 1♂, 1♀, same locality and data, Scott's Dam. 120 m. 5817 (QMB); 1♂, MEQ: 21°37'S × 148°59'E, Stony Ck. track crossing, 23 Mar-31 May 2000, Monteith & Cook. 280 m. 9414 (QMB); 1♂, MEQ: 23°09'S × 150°28'E, Johannsens Cave, 18 Dec-21 Mar 2000. Monteith. 100 m. 9246 (QMB); 1♀, MEQ: 25°34'S × 152°03'E, Mt Walsh, 1 km N, 9 Oct-19 Dec 1999, D & I. Cook. 320 m. 9053 (QMB); 1♂, SEQ: 25°13'S × 148°59'E, Expedition R. Nat. Pk, 5733 Amphitheatre scrub, 520 m, 17 Dec-5 Mar 1998, Cook & Monteith (QMB); 1♂, SEQ: 23°37'S × 150°28'E, Mt. Gavial, 3 km SSW, 27 Sep 1999. 320 m, G. B. Monteith. 7772 (QMB); 1♀, SEQ: 26°08'S × 151°58'E, Namgur State For., 24 Nov 1995, G. Monteith, 320 m (QMB); 2♂♂, CEQ: 21°46'S × 148°51'E, Pine Mt. 3 km S, 240 m, 1 June 2000. GB Monteith. 9279 (QMB); 1♀, SEQ: 26°17'S × 152°50'S, Cooran Tbl'd (Barracks), 12 Apr 1995, 400 m, Monteith, Koch & Thompson (QMB); 1♂, SEQ: 23°56'E × 151°21'E, Canoe Point E.P. 5m. 20 Mar 2000, G. Monteith. 9254 (QMB); 1♀, C.QLD: 20°12'S × 147°55'E, Mt. Aberdeen, Sth Summit, 6 Dec 1996, 900 m, G. Monteith (QMB); 2♂♂, Qld: 27°24.1'S × 152°47.4'E, Boombana Nat. Pk. site 1. 16 Feb 2004. 440 m, QM party. 51832, 51834 (QMB); 1♀, QLD: 21°34'S × 149°12'E, Upper E. Funnel Ck. 16 Nov 1992, 450 m, Monteith, Thompson & Janetzki (QMB); 1♀, Eurimbula Nat. Pk., C.QLD. 15 Sept 1989, G. B. Monteith (QMB); 1♀, Upper Dalrymple Ck. via Goomburra, SEQld, 21-22 Nov 1987, G. B. Monteith (QMB).

Relationships. With respect to shape, surface structure, and structure of internal sac of aedeagus, most closely related to *L. papuensis* Macleay, and also, but probably slightly less so, to *L. papuella* Darlington and *L. gemina*, spec. nov.

Lebia papuella Darlington (stat. restit.)

Figs 7, 42

Lebia papuella Darlington, 1968: 88 (stat. restit.).

Lebia papuensis Macleay, 1876: 167; Moore et al. 1987: 309; Lorenz 1998: 458.

Note. Moore in his catalogue (Moore et al. 1987) synonymized *L. papuella* Darlington with the Australian-New Guinean species *L. papuensis* Macleay [in his opinion = *L. picipennis* (Macleay), but see under *L. papuensis* Macleay and *L. australica*, nom. nov.], although Darlington (1968) in the description of his *L. papuella* already compared this with *L. papuensis* Macleay [in Darlington still as *L. picipennis* (Macleay)] and even directed to the rather different microreticulation of the prothorax of both species. Hence, Moore's decision is quite difficult to understand, and probably it was not based on the examination of the types of *L. papuella*, but, if ever, per-

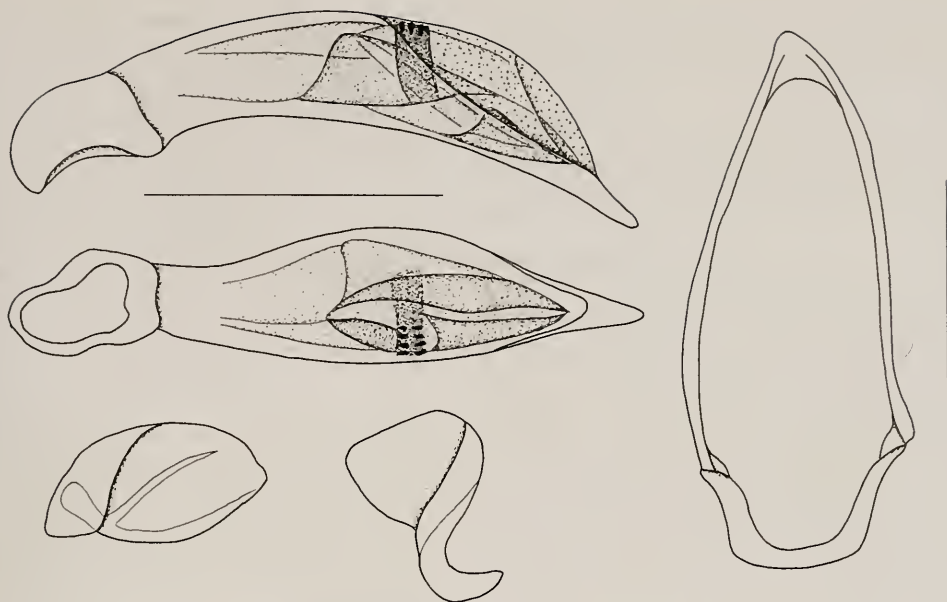


Fig. 7. *L. papuella* Darlington. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

haps only on those of *L. papuensis* Macleay and *L. picipennis* (Macleay). Because both latter species, however, actually do not refer to the same species, Moore united three different species. Lorenz (1998) simply accepted Moore's decision without further comment.

Diagnosis. Rather small, almost unicolourous dark yellowish to light brownish species with glossy, not microreticulate head and pronotum; further distinguished from the most closely related species *L. gemina*, spec. nov. by lesser size, narrower pronotum, and the densely denticulate, transverse, sclerotized band that runs from the top of internal sac down the right side.

Examined types. Paratype: 1♂, Dobodura Papua, N. G. Mar-July, 1944 Darlington/Paratype *Lebia papuella* Darl. (ANIC).

Supplementary description

Measurements. Length: 4.5-5.2 mm; width: 2.1-2.35 mm. Ratios: w/l pr: 1.52-1.57; w pr/h: 1.06-1.12; l/w el: 1.37-1.40; w el/pr: 1.88-1.96.

Colour. Upper and and lower surface, including mouth parts, antennae, and legs light reddish to light brown. Surface of elytra either unicolourous, or in middle with an indefinite brownish cloud. In darker specimens margins of pronotum slightly lighter.

Head. Of average size and shape, slightly nar-

rower than pronotum. Eyes very large, semicircular. Antennae of moderate size, surpassing basal angles of pronotum by about 3 antennomeres. Surface without any microreticulation, with very few wrinkles and scattered, extremely fine punctures, highly glossy.

Pronotum (Fig. 42). Comparatively narrow, widest at or slightly in front of middle. Apical angles widely rounded off, lateral margin evenly gently convex, faintly sinuate in front of the rectangular basal angles. Base in middle much produced, lateral excision deep, lateral parts of base transversal, gently convex. Apex margined only laterally, base distinctly margined, lateral margin explanate throughout, marginal channel widened towards base, moderately deep. Surface with a distinct prebasal transverse sulcus. Disk without any microreticulation, with more or less dense and distinct transverse wrinkles and with very scattered punctures, surface highly glossy.

Elytra. Medium sized (for group), rather oval-shaped, markedly widened towards apex, widest well behind middle. Upper surface rather convex. Humeri rounded, lateral margin obliquely convex, barely incised at basal third, apex gently sinuate, apical angles widely rounded, apical margin slightly incurved at suture. Striae complete, deep, at bottom barely crenulate. Intervals convex throughout. 3rd interval bipunctate, punctures situated at 3rd stria. Series of marginal punctures not interrupted in mid-

dle. Intervals with moderately distinct, markedly transverse microreticulation and very scattered punctures, fairly glossy. Inner wings fully developed.

Lower surface. Metepisternum elongate, almost 2× as long as wide. Abdomen punctate and sparsely pilose, pilosity slightly denser on terminal sternite. Terminal sternite 4-setose in male, 6-setose in female.

Legs. Of moderate size. 4th tarsomeres very deeply excised. Tarsal claws with 3 large teeth.

Male genitalia (Fig. 7). Genital ring large, narrow and elongate, slightly asymmetric, rather triangular, with narrow, obtuse apex and narrow, elongate, at tip markedly transverse basis. Aedeagus moderately elongate, asymmetrically widened in middle, barely sinuate, lower surface gently concave. Apex moderately elongate, depressed, straight, narrowly triangular, with obtuse tip. Orificium elongate. Folding of internal sac complex, with a transverse, densely denticulate sclerite running from the roof of internal sac on the left side. Parameres of dissimilar shape, left paramere rather elongate in comparison, longer than right one, with almost regular, obtusely triangular apex; right paramere short but massive, rhomboidal.

Variation. Apparently this species, like several other species of the genus *Lebia*, is rather variable with respect to size. One specimen from northern Australia that deviates in its particularly wide pronotum, was doubtfully affiliated to this species. Because it is a female, a reliable identification at present is not possible.

Distribution. New Guinea, northeastern Australia.

Collecting circumstances. Most specimens sampled at light in tropical lowland rain forest, others collected by canopy fogging and sifting in rain forest at rather low altitude. Provided appropriate sampling techniques are employed, this species can be captured in quite large numbers.

Relationships. With respect to shape and structure of surface of pronotum, next related to *L. gemina*, spec. nov., but on the basis of structure of internal sac of aedeagus, *L. papuella* is less closely related to *L. papuensis* Macleay and *L. australica*, nom. nov. than *L. gemina*.

New records (54 ex.). NG: P.N.G., Madang Prov., Baiteta, Light AR53, 28.V.1996, leg. O. Missa (CBM, IRSNB); same locality, Light AR52, 23.V.1996 (IRSNB); same locality, Light AR8, 11.VII.1996 (IRSNB); same locality, Light AR50, 18.III.1996 (IRSNB); same locality, Light AR10, 16.IV.1996 (IRSNB); same locality, Light X0, 29.IV.1996 (IRSNB); same locality, Fog AR15, 14.V.1996

(IRSNB); same locality, Fog AR63, 10.VII.1996 (IRSNB); same locality, Fog 23, 4.VII.1996 (IRSNB); same locality, Fog AR54, 3.VI.1996 (IRSNB); same locality, Fog AR30, 14.VII.1996 (IRSNB); same locality, Fog M9, 2.VI.1994 (IRSNB); Papua N. G., Morobe-Pr., Tekadu-Kakaro, Ivimka Riv. Stat. 180 m, 2-4.3.1998, A. Riedel (CBM); Irian Jaya, Jayapura, Sentani, Cyclops-Mt., 400-500 m, 10.8.1992, leg. A. Riedel (CBM); Mt. Lamington, N. E. Papua, 1300 to 1500 feet, C. T. McNamara (SAMA). – AUS: 15.47S 145.17E Moses Ck. 4 km N by E of Mt. Finnigan QLD, 14-16 Oct. 1980, T. Weir (ANIC).

Lebia gemina, spec. nov.

Figs 8, 23, 43

Examined types. Holotype: ♂, Coll. I.R.Sc.N.B. Canopy mission P.N.G. Madang province, Baiteta, Light AR53, 28.V.1996, Leg. O. Missa (IRSNB). – Paratypes: 40 ♂♂, 11 ♀♀, same data (CBM, IRSNB); 1 ♀, same locality, Light AR52, 20.V.1996 (IRSNB); 1 ♂, same locality, Light AR8, 11.VII.1996 (IRSNB); 1 ♂, same locality, Light AR20, 16.IV.1996 (IRSNB); 1 ♀, same locality, 16.IV.1966, Light AR10 (IRSNB).

Diagnosis. Rather small, almost unicolourous dark yellowish to light brownish species with glossy, not microreticulate head and pronotum; distinguished from the most closely related species *L. papuella* Darlington by slightly larger size, wider pronotum, and by the densely denticulate, transverse, sclerotized band that runs from the side to side along the top of internal sac, but is widely interrupted at bottom.

Supplementary description

Measurements. Length: 4.8-6.0 mm; width: 2.35-2.9 mm. Ratios: w/l pr: 1.59-1.69; w pr/h: 1.13-1.18; l/w el: 1.36-1.41; w el/pr: 1.81-1.89.

Colour (Fig. 28). Upper and lower surface, including mouth parts and antennae light brown. Legs light reddish. Surface of elytra unicolourous, rarely (in lighter specimens) in middle with an indefinite brownish cloud. In darker specimens margins of pronotum slightly lighter.

Head. Of average size and shape, considerably narrower than pronotum. Eyes very large, semicircular. Antennae of moderate size, surpassing basal angles of pronotum by almost 3 antennomeres. Surface without any microreticulation, also without distinct wrinkles and almost impunctate, highly glossy.

Pronotum (Fig. 43). Rather wide, widest at or slightly in front of middle. Apical angles widely rounded off, lateral margin evenly gently convex, faintly sinuate in front of the rectangular basal angles. Base in middle much produced, lateral excision deep, lateral parts of base transversal, gently



Fig. 8. *L. gemina*, spec. nov. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

convex. Apex margined except in middle, base distinctly margined, lateral margin explanate throughout, marginal channel widened towards base, moderately deep. Surface with a distinct prebasal transverse sulcus. Disk with rather superficial, slightly transverse microreticulation, with rather dense, fairly distinct transverse wrinkles and with very scattered punctures, surface moderately dull.

Elytra. Medium sized (for group), rather oval-shaped, markedly widened towards apex, widest well behind middle. Upper surface rather convex. Humeri rounded, lateral margin obliquely convex, barely incised at basal third, apex gently sinuate, apical angles widely rounded, apical margin slightly incurved at suture. Striae complete, deep, at bottom barely crenulate. Intervals convex throughout. 3rd interval bipunctate, punctures situated at 3rd stria. Series of marginal punctures not interrupted in middle. Intervals with moderately distinct, markedly transverse microreticulation and very scattered punctures, fairly glossy. Inner wings fully developed.

Lower surface. Metepisternum elongate, almost 2× as long as wide. Abdomen punctate and sparsely pilose, pilosity slightly denser on terminal sternite. Terminal sternite 4-setose in male, 6-setose in female.

Legs. Of moderate size. 4th tarsomeres very deeply excised. Tarsal claws with 3 large and usually an additional small teeth.

Male genitalia (Fig. 8). Genital ring large, nar-

row and elongate, slightly asymmetric, rather triangular, with narrow, obtuse apex and narrow, elongate, at tip markedly transverse basis. Aedeagus moderately elongate, comparatively compact, barely widened in middle, barely sinuate, lower surface very gently concave. Apex elongate, depressed, straight, parallel, situated asymmetrically on right side, with slightly obtuse tip. Orificium moderately elongate. Folding of internal sac complex, with a transverse, densely denticulate sclerite running from right side along roof of internal sac, where it is conspicuously sinuate, to left side, but is interrupted at bottom of internal sac. Parameres of dissimilar shape, left paramere rather elongate in comparison, longer than right one, with slightly transverse apex; right paramere short but massive, rhomboidal.

Variation. Apparently, this species, like several other species of the genus *Lebia*, is rather variable with respect to size. Otherwise, little variation noted.

Distribution. Papua New Guinea, ? northeastern Australia.

Collecting circumstances. All specimens sampled at light in tropical lowland rain forest. Provided appropriate sampling techniques are employed, this species can be captured in quite large numbers.

Etymology. The name refers to the extremely similar shape of this species that easily leads to confusion with *L. papuella* Darlington.

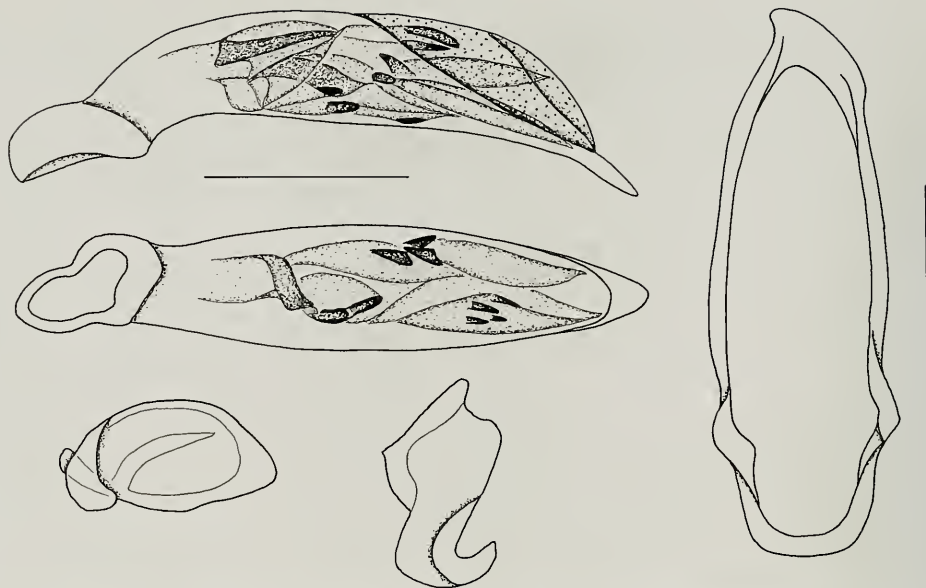


Fig. 9. *L. barda* Darlington. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

Additional material. Two specimens are tentatively attributed to this species, but, as they are females, they are not included in the type series. The one from northern Australia quite well matches *L. gemina* in shape and colour, but the specimen from Bulolo differs somewhat in colour, shape of pronotum, and presence of 8 setae at female terminal abdominal sternum. This may be even representative of an additional new species. This question can only be solved by sampling and examination of males from the same area: 1♀, AUSTRALIA: n. Qld, Wongabel S. F. via Atherton, 25.-27.III.1992, Storey, De Faveri (DPIM); 1♀, N. Guinea: NE, Bulolo, 700 m, 6.XI.1969/J. Sedlacek Collector BISHOP/*Lebia externa* Darlington det. G. E. Ball, 1989 (BMH).

For future research measurements and ratios of both specimens are added:

Measurements (1♀ from north Queensland). Length: 5.5 mm; width: 2.7 mm. Ratios: w/l pr: 1.59; w pr/h: 1.13; l/w el: 1.37; w el/pr: 1.91.

Measurements (1♀ from Bulolo, PNG). Length: 6.15 mm; width: 2.85 mm. Ratios: w/l pr: 1.56; w pr/h: 1.10; l/w el: 1.43; w el/pr: 1.90.

Relationships. With respect to surface structure of pronotum most closely related to *L. papuella* Darlington, but to structure of internal sac of aedeagus, more similar to *L. papuensis* Macleay and *L. australia*, nom. nov.

Lebia barda Darlington

Figs 9, 44

Lebia barda Darlington, 1968: 88; Lorenz 1998: 456.

Diagnosis. Rather small, unicolourous yellowish species with distinctly microreticulate head and pronotum; distinguished from related species by internal sac of aedeagus strewn with many denticles.

Examined types. Paratype: 1♂, NEW GUINEA: PAPUA Normanby Is. Wakaiuna, Sewa Bay, Nov. 21-30, 1956, W. W. Brandt (BMH).

Supplementary description

Measurements. Length: 5.0-5.4 mm; width: 2.4-2.55 mm. Ratios: w/l pr: 1.61-1.65; w pr/h: 1.17-1.19; l/w el: 1.35-1.39; w el/pr: 1.78-1.82.

Male genitalia (Fig. 9). Genital ring large, very narrow and elongate, slightly asymmetric, rather parallel, with wide, oblique and convex apex and narrow, elongate basis. Aedeagus moderately elongate, slightly widened in middle, barely sinuate, lower surface straight, very gently concave towards apex. Apex moderately elongate, depressed, straight, wide, obtuse. Orificium elongate. Folding of internal sac complex, with many dentiform sclerites in each part of internal sac, and a complexly folded, only at borders sclerotized plate near base. Parameres of dissimilar shape, left paramere rather elongate in comparison, longer than right one, with

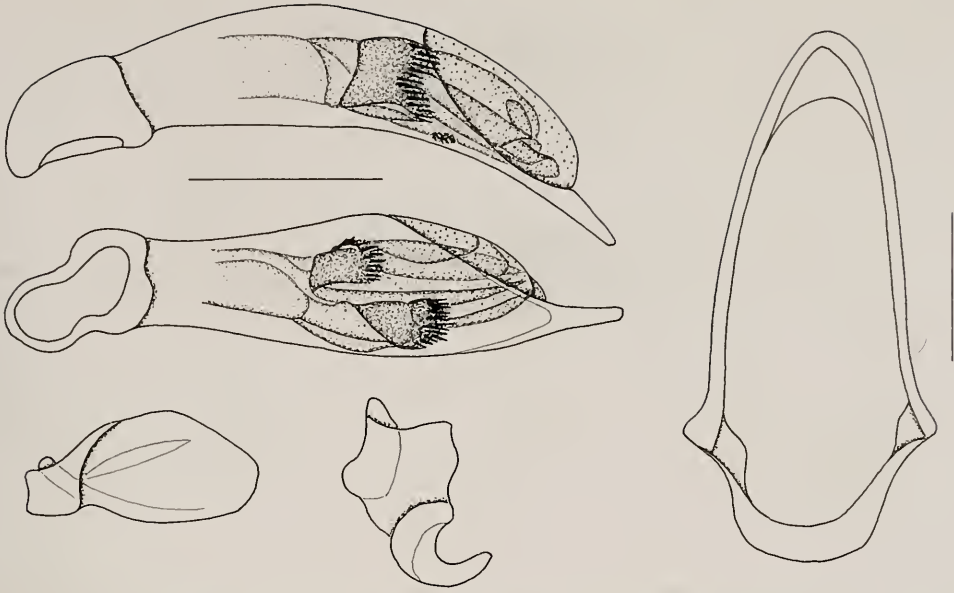


Fig. 10. *L. insularum* Darlington. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

triangular apex; right paramere short but massive, rhomboidal.

Variation. Very little variation noted.

Distribution. New Guinea.

Collecting circumstances. The specimens mentioned below sampled by canopy fogging in tropical lowland rain forest. At the mentioned locality, *L. barda* is by far less common than *L. papuensis*.

Relationships. According to shape and surface structure apparently most closely related to *L. inornata*, spec. nov. from Salawati Island. But relationships uncertain, as long as male genitalia are yet unknown of the latter species.

New records (5 ex.). P.N.G., Madang Prov., Baiteta, Light AR53, 28.V.1996, leg. O. Missa (IRSNB, CBM).

Lebia insularum Darlington

Figs 10, 29, 45

Lebia insularum Darlington, 1968: 89; Lorenz 1998: 458.

Diagnosis. Rather large, contrastingly coloured species with light fore body and piceous elytra, and glossy head and pronotum; distinguished from related species by internal sac of aedeagus with a transverse, densely denticulate, conspicuously sinuate sclerite that is narrowly interrupted at bottom and at the upper right side.

Examined types. Holotype: ♂, NEW GUINEA: PAPUA Normanby Is. Wakaiuna, Sewa Bay, Jan. 1-8-1957/ J. L. Gressitt Collector (BMNH). – Paratype: ♂, Rossel Is., S. E. Papua. Oct. 1963 W. W. Brandt/Paratype *Lebia insularum* Darl. (ANIC).

Supplementary description

Measurements. Length: 6.7-7.1 mm; width: 3.2-3.3 mm. Ratios: w/l pr: 1.75-1.81; w pr/h: 1.23-1.25; l/w el: 1.38-1.42; w el/pr: 1.68-1.73.

Colour (Fig. 29). Fore body and lower surface, including mouth parts, antennae, and legs light reddish. Surface of elytra contrastingly, unicolourous piceous.

Male genitalia (Fig. 10). Genital ring large, rather narrow and elongate, barely asymmetric, triangular, with rather narrow, obtuse apex and narrow, elongate, slightly convex basis. Aedeagus moderately elongate, widened in middle, slightly sinuate, lower surface at base straight, in apical half concave. Apex elongate, depressed, straight, almost parallel, situated asymmetrically on right side, with obtuse tip. Orificium elongate. Folding of internal sac complex, with a transverse, densely denticulate, conspicuously sinuate sclerite that is narrowly interrupted at bottom and at the upper right side of internal sac. Parameres of dissimilar shape, left paramere rather elongate in comparison, longer than right one, with remarkably transverse apex; right paramere short but massive, rhomboidal.

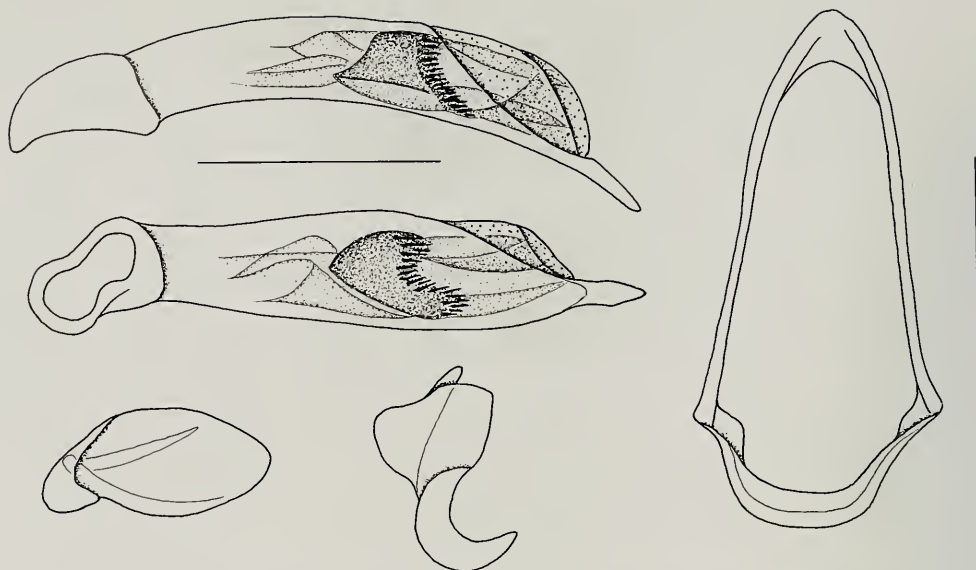


Fig. 11. *L. cordifer* Darlington. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

Distribution. So far known only from Normanby and Rossel Islands off the east coast of New Guinea.

Collecting circumstances. Unknown.

Relationships. Darlington in his description said that he did not know its relations. According to shape and surface structure of pronotum and to structure of male genitalia it is nearest related to *L. gemina*, spec. nov.

New records. None.

***Lebia cordifer* Darlington**
Figs 11, 30

Lebia cordifer Darlington, 1968: 87; Lorenz 1998: 456.

Note. The holotype, and altogether single recorded specimen, of this characteristically patterned species was not available. Three specimens caught rather recently in northern Australia, however, match so exactly Darlington's description that I don't have any doubt about the species identity. As one of these specimens is a male, this gives the opportunity to dissect and figure the male genitalia. Darlington, in his description, unfortunately disclaimed to dissect the male holotype, and apparently, he generally did not have a high opinion of the use of male genitalia for taxonomy which unfortunately somewhat depreciates his taxonomic work.

Because certain other *Lebia* occur in New Guin-

ea and northern Australia, this range extension is not too surprising, in particular, because this species so far was known only from the holotype.

Supplementary description

Measurements. Length: 5.7-6.2 mm; width: 2.6-2.8 mm. Ratios: w/1 pr: 1.48-1.58; w pr/h: 1.13-1.21; 1/w el: 1.40-1.43; w el/pr: 1.80-1.85.

Colour (Fig. 30). Head and pronotum yellow to light reddish, pronotum with or without slightly darker centre. Elytra piceous with a large, rather cordiform yellow sutural spot that at 5th and 6th intervals reaches the humerus, but does not attain the apex. Mouth parts, antennae, and legs yellow.

Male genitalia (Fig. 11). Genital ring large, narrow and elongate, barely asymmetric, triangular, with rather narrow, obtuse apex and moderately elongate, slightly convex basis. Aedeagus narrow and elongate, gently widened in middle, not sinuate, lower surface gently concave throughout. Apex elongate, depressed, straight, lancet-shaped, situated asymmetrically on right side, with acute tip. Orificium elongate. Folding of internal sac complex, with a transverse, densely denticulate, conspicuously sinuate, virtually uninterrupted sclerite. Parameres of dissimilar shape, left paramere rather elongate in comparison, longer than right one, with somewhat transverse apex; right paramere short but massive, rhomboidal.

Variation. Apart from the uniformly reddish coloured pronotum and generally less contrasting

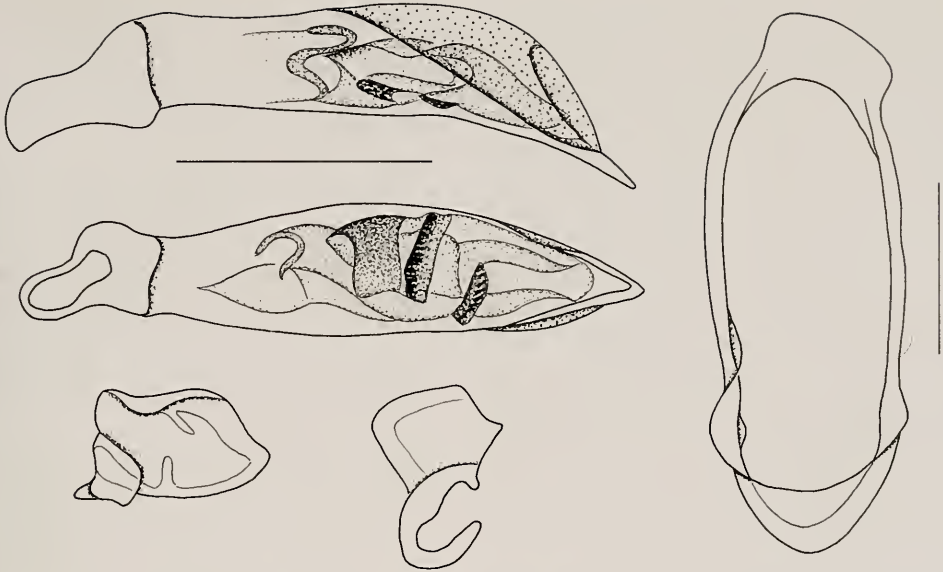


Fig. 12. *L. subglabra*, spec. nov. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

colouration in one specimen that probably is due to rather fresh hatching of this specimen, little variation noted.

Distribution. Central Irian Jaya, New Guinea, and extreme northern and northwestern Australia.

Collecting circumstances. Largely unknown. Two of the three mentioned Australian specimens were collected by "Berlese extraction, closed forest litter", and "Rain forest, sieved litter".

Relationships. According to structure of male genitalia probably related to the *papuensis*-lineage, but unique in this group by its striking colour pattern.

New records (3 ex.). AUS: 14.25S 126.40E, CALM Site 4/3 14 km S by E of Kalumburu Mission, W.A., 3-6 June 1988, T. A. Weir/*Lebia* ? sp. nov. det. T. A. Weir 1989 (ANIC); 12.21S 130.42E, Casuarina Beach, NT, 10 km NNE of Darwin, 22.x.72, E. Britton (CBM); NT, sth. Alligator Inn, 8 July 1979, G. B. Monteith (QMB).

***Lebia subglabra*, spec. nov.**
Figs 12, 46

Types. Holotype: ♂, Irian Jaya, Panai-Pr., Epomani, km 145, 550-750 m, 15.-16.1.1996, leg. A. Riedel (ZSM-CBM). – Paratypes: 1♀, same data (CBM); 1♂, Irian Jaya, Warmare, Manokwari-Pr. 200-700 m, 22.8.1991, leg. A. Riedel (CBM); 1♂, Dogon, Amazon Bay District, 2400 ft., S. E. Papua, Oct.-Nov. 1962 W. W. Brandt/*Lebia papuella*

D. det. Darl. 69 (ANIC); 1♀, Mt. Lamington, N. E. Papua, 1300 to 1500 feet, C. T. McNamara (SAMA).

Diagnosis. Rather small, unicolourous light reddish or gently clouded species with superficial microreticulation of head and pronotum; distinguished from related species by two densely denticulate sclerites at bottom of internal sac and a third behind these that is strongly sclerotized at its left margin.

Description

Measurements. Length: 4.6-5.0 mm; width: 2.2-2.4 mm. Ratios: w/1 pr: 1.47-1.49; w pr/h: 1.17-1.21; l/w el: 1.34-1.39; w el/pr: 1.91-2.0.

Colour. Fore body and lower surface, including mouth parts, antennae, and legs light reddish. Surface of elytra more or less light reddish, with or without an indefinite brownish cloud that extends from base, laterally to 5th or 6th stria, but leaves the apex widely light.

Head. Of average size and shape, narrower than pronotum. Eyes very large, semicircular. Antennae of moderate size, surpassing basal angles of pronotum by about 2 antennomeres. Labrum in middle near base slightly impressed. Surface with fine, superficial, isodiametric microreticulation in middle, also with some very few wrinkles and scattered fine punctures, glossy.

Pronotum (Fig. 46). Moderately wide, widest at or slightly behind middle. Apical angles widely rounded off, lateral margin evenly gently convex,

faintly sinuate in front of the rectangular basal angles. Base in middle much produced, lateral excision deep, lateral parts of base transversal, gently convex. Apex margined except in middle, base distinctly margined, lateral margin explanate throughout, marginal channel widened towards base, moderately deep. Surface with a distinct prebasal transverse sulcus. Disk with rather superficial, slightly transverse microreticulation, with rather dense, fairly distinct transverse wrinkles and with very scattered punctures, surface moderately dull.

Elytra. Medium sized (for group), rather oval-shaped, markedly widened towards apex, widest well behind middle. Upper surface rather convex. Humeri rounded, lateral margin obliquely convex, barely incised at basal third, apex gently sinuate, apical angles widely rounded, apical margin slightly incurved at suture. Striae complete, deep, at bottom barely crenulate. Intervals convex throughout. 3rd interval bipunctate, punctures situated at 3rd stria. Series of marginal punctures not interrupted in middle. Intervals with moderately distinct, markedly transverse microreticulation and very scattered punctures, fairly glossy. Inner wings fully developed.

Lower surface. Metepisternum elongate, almost 2× as long as wide. Abdomen punctate and sparsely pilose, pilosity slightly denser on terminal sternite. Terminal sternite 4-setose in male, 6-setose in female.

Legs. Of moderate size. 4th tarsomeres very deeply excised. Tarsal claws with 4 large teeth.

Male genitalia (Fig. 12). Genital ring large, rather narrow and elongate, fairly asymmetric, widened towards apex, with wide, oblique and convex apex and narrow, elongate basis. Aedeagus moderately elongate, slightly widened in middle, barely sinuate, lower surface straight, very gently concave in apical third. Apex moderately elongate, depressed, straight, triangular. Orificium elongate. Folding of internal sac complex, with two transverse, very densely denticulate sclerites in middle at bottom, and another plate that is strongly sclerotized at its left margin. Parameres of dissimilar shape, left paramere short in comparison, though longer than right one, with triangular apex; right paramere short but massive, rhomboidal.

Variation. Apart from slight differences in colouration, slight variation noted in shape of pronotum that can be more or less distinctly sinuate near base.

Distribution. So far recorded at few localities from western Irian Jaya through the Central Highlands to southeastern Papua New Guinea.

Collecting circumstances. Largely unknown, most probably collected by sifting in rain forest at rather low altitude.

Etymology. The name refers to the moderately glabrous surface of this species.

Additional examined material: 1♀, Mt. Lamington, N. E. Papua, 1300 to 1500 feet, C. T. McNamara (SAMA). This specimen is tentatively attributed to *L. subglabra*, because shape and structure of pronotum rather matches those of the typical specimens. However, as only dissection of male genitalia provides certainty of species affiliation, it is not included in the type series. The specimen was mounted, and probably caught, together with a male specimen of *L. papuella* Darlington which corroborates the sympatric and probably also syntopic occurrence of both species.

Relationships. With respect to the absence of a distinct elytral pattern, this species seems to be closely related to the *papuana*-lineage of Australia and New Guinea, though structure of aedeagus is extremely similar to those of *L. novabritannica*, spec. nov. from New Britain and *L. salomona*, spec. nov. from Bougainville Island.

Lebia novabritannica, spec. nov.

Figs 13, 31

Types. Holotype: ♂, PNG: E New Britain Prov. 30 km SW Kokopo, 5 km SW Arabam, 04°35'75"S, 152°06'84"E, 200 m, 25.II.2000, leg. A. Weigel KL (CBM-ZSM). – Paratypes: 1♂, 1♀, same data (CBM; CWP).

Diagnosis. Rather small, yellow species with a contrasting black, somewhat anchor-shaped elytral spot; further distinguished from related species except for *L. subglabra*, spec. nov. by two transverse, densely denticulate sclerites in middle at bottom of internal sac of aedeagus, and another plate that is strongly sclerotized at its left margin.

Description

Measurements. Length: 4.4-5.35 mm; width: 2.0-2.55 mm. Ratios: w/l pr: 1.52-1.56; w pr/h: 1.19-1.25; l/w el: 1.37-1.43; w el/pr: 1.84-1.90.

Colour (Fig. 31). Upper and lower surface, including mouth parts, palpi, antennae, and legs yellow. Elytra with a black, gently anchor-shaped sutural spot of variable size in posterior half that does not attain the margin.

Head. Of average size and shape, narrower than pronotum. Eyes very large, semicircular. Antennae of moderate size, surpassing basal angles of pronotum by about 2 antennomeres. Labrum in middle gently impressed. Frons without distinct impressions, but rather uneven, with a shallow, more or



Fig. 13. *L. novabritannica*, spec. nov. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

less distinct v-shaped impression in middle. Surface with rather superficial isodiametric microreticulation, with scattered fine punctures, rather glossy.

Pronotum. Moderately wide, slightly wider than head, widest at middle, slightly narrowed towards base. Apical angles widely rounded off, lateral margin anteriorly very convex, from middle gently convex to almost straight, not or barely sinuate in front of the rectangular basal angles. Base in middle much produced, lateral excision deep, lateral parts of base transversal, gently convex. Apex margined except in middle, base distinctly margined. Lateral margin explanate throughout, explanation even widened towards base, marginal channel fairly deep. Surface with a distinct prebasal transverse sulcus. Disk with rather distinct, about isodiametric microreticulation, with fairly dense, fine, more or less irregular wrinkles and with very scattered punctures, surface moderately glossy.

Elytra. Rather elongate (for group), oval-shaped, markedly widened towards apex, widest well behind middle. Upper surface rather convex. Humeri rounded, lateral margin obliquely convex, barely incised at basal third, apical angles widely rounded, apex gently sinuate, apical margin slightly incurved at suture. Striae complete, deep, at bottom more or less distinctly crenulate. Intervals convex throughout. 3rd interval bipunctate, punctures situated at 3rd stria. Series of marginal punctures not interrupted in middle. Intervals with distinct, almost isodiametric to gently transverse microreticulation and

very scattered punctures, rather glossy. Inner wings fully developed.

Lower surface. Metepisternum rather elongate, almost 2× as long as wide. Abdomen sparsely punctate and pilose, pilosity slightly denser on terminal sternite. Terminal sternite in male 4-setose, in female 6-setose.

Legs. Of moderate size. 4th tarsomeres very deeply excised. Tarsal claws with 4 large teeth.

Male genitalia (Fig. 13). Genitalia extremely similar to those of *L. subglabra*, spec. nov. Genital ring large, rather elongate, fairly asymmetric, remarkably widened towards apex, with wide, oblique and convex apex and narrow, elongate basis. Aedeagus moderately elongate, slightly widened in middle, barely sinuate, lower surface straight, gently concave in apical third. Apex rather elongate, depressed, straight, triangular. Orificium elongate. Folding of internal sac complex, with two transverse, very densely denticulate sclerites in middle at bottom, and another plate that is strongly sclerotized at its left margin. Parameres of dissimilar shape, left paramere short in comparison, though longer than right one, with triangular apex; right paramere short but massive, rhomboidal.

Variation. Apart from some differences in body size and relative shape of pronotum and elytra, some variation noted in shape of elytral spot that is perceptibly smaller in the holotype than in both paratypes.

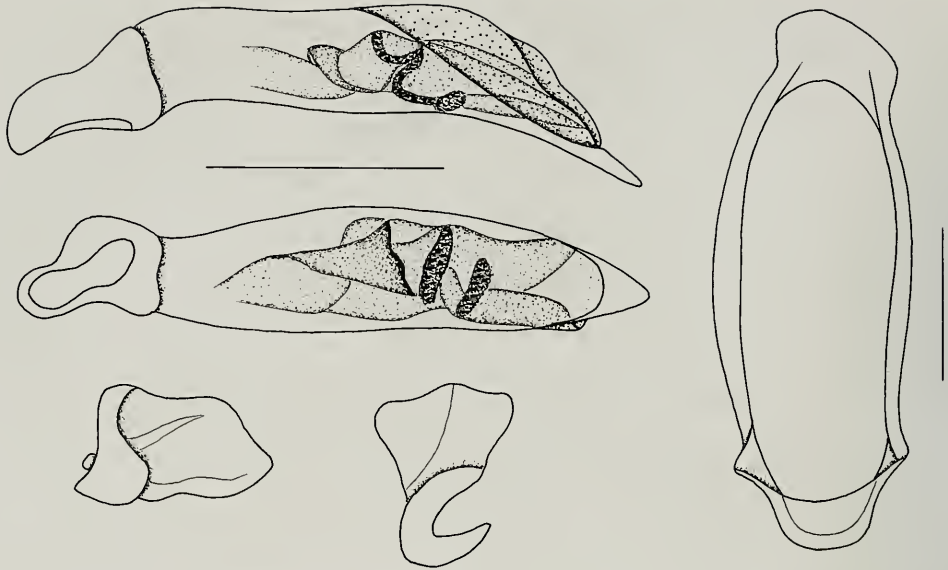


Fig. 14. *L. salomona*, spec. nov. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

Distribution. New Britain. Known only from type locality.

Collecting circumstances. Largely unknown. Probably collected by sieving litter or moss from trees in rain forest.

Etymology. The name refers to the range of the species, the island of New Britain.

Relationships. With respect to elytral pattern, this seems to be a rather unique species in the Papuan-Australian region, rather similar to the Oriental *L. monostigma* Andrewes and its allies, though structure of aedeagus is extremely similar to those of *L. subglabra*, spec. nov. from New Guinea and *L. salomona*, spec. nov. from Bougainville Island.

Lebia salomona, spec. nov.

Figs 14, 32

Types. Holotype: ♂, SOLOMON ISLANDS, Bougainville Island, Kukugai Village (Buin), 17.10.1960-2.2.1961, W. W. Brandt (ANIC). - Paratypes: 2♀♀, same data (ANIC, CBM); 1♀, SOLOMON ISLANDS, Bougainville Island, Konga Village (Buin), 6.2.-21.3.1961, W. W. Brandt (ANIC).

Diagnosis. Rather small, light reddish species with a large, contrasting, black elytral spot that leaves the apex and in some specimens also the humeri yellow; further distinguished from related species ex-

cept for *L. subglabra*, spec. nov. and *L. novabritannica*, spec. nov. by two transverse, densely denticulate sclerites in middle at bottom of internal sac of aedeagus, and another plate that is strongly sclerotized at its anterior margin.

Description

Measurements. Length: 4.6-5.3 mm; width: 2.25-2.5 mm. Ratios: w/1 pr: 1.45-1.51; w pr/h: 1.20-1.23; 1/w el: 1.36-1.38; w el/pr: 1.82-1.92.

Colour (Fig. 32). Upper and lower surface, including mouth parts, palpi, antennae, and legs yellow. Elytra with a large black spot of variable size that leaves the apex and in some specimens also the humeri yellow.

Head. Of average size and shape, narrower than pronotum. Eyes very large, semicircular. Antennae of moderate size, surpassing basal angles of pronotum by about 2 antennomeres. Frons without distinct impressions. Surface with rather superficial isodiametric microreticulation, impunctate, rather glossy.

Pronotum. Moderately wide, slightly wider than head, widest at middle, slightly narrowed towards base. Apical angles widely rounded off, lateral margin anteriorly very convex, from middle gently convex to almost straight, not sinuate in front of the rectangular basal angles. Base in middle much produced, lateral excision deep, lateral parts of base transversal, gently convex. Apex margined except in middle, base distinctly margined. Lateral margin explanate throughout, explanation even widened

towards base, marginal channel fairly deep. Surface with a distinct prebasal transverse sulcus. Disk with rather distinct, about isodiametric microreticulation, with fairly dense, very fine, more or less irregular wrinkles, but without discernible punctures, surface moderately glossy.

Elytra. Rather elongate (for group), oval-shaped, markedly widened towards apex, widest well behind middle. Upper surface rather convex. Humeri rounded, lateral margin obliquely convex, barely incised at basal third, apical angles widely rounded, apex gently sinuate, apical margin slightly incurved at suture. Striae complete, deep, at bottom more or less distinctly crenulate. Intervals convex throughout. 3rd interval bipunctate, punctures situated at 3rd stria. Series of marginal punctures not interrupted in middle. Intervals with distinct, almost isodiametric to gently transverse microreticulation and very scattered punctures, rather glossy. Inner wings fully developed.

Lower surface. Metepisternum rather elongate, almost 2× as long as wide. Abdomen sparsely punctate and pilose, pilosity slightly denser on terminal sternite. Terminal sternite in male 4-setose, in female 6-setose.

Legs. Of moderate size. 4th tarsomeres very deeply excised. Tarsal claws with 3 large and mostly one additional smaller teeth.

Male genitalia (Fig. 14). Genitalia extremely similar to those of *L. subglabra*, spec. nov. and *L. novabritannica*, spec. nov. Genital ring large, elongate, comparatively wide, fairly asymmetric, widened towards apex, with wide, oblique and convex apex and very narrow, elongate basis. Aedeagus moderately elongate, slightly widened in middle, barely sinuate, lower surface almost straight, very gently concave in apical third. Apex moderately elongate, wide, depressed, straight, triangular, obtuse at tip. Orificium elongate. Folding of internal sac complex, with two transverse, very densely denticulate sclerites in middle at bottom, and another plate that is strongly sclerotized at its anterior left margin. Parameres of dissimilar shape, left paramere short in comparison, though longer than right one, with triangular apex; right paramere short but massive, rhomboidal.

Variation. The elytral pattern is quite variable in this species: in two specimens including the holotype the dark colour is reduced at the base of the elytra to such degree that the basal third is almost completely red. One of the two additional specimens from Kukugai village has the base completely dark, whereas in the single specimen from Konga Village the humeri are slightly less dark than the rest. The colouration of the elytral base in this species hence seems to be quite variable and may occur

all grades from almost completely red to completely black. The red apical margin, however, is quite similar in all examined specimens. The largest species also has the widest pronotum, thus, a sort of allometric variation may be present in this species.

Distribution. Bougainville, Solomon Islands.

Collecting circumstances. Unknown.

Etymology. The name refers to the range of the species, the Solomon Islands.

Relationships. With respect to elytral pattern, this seems to be a rather unique species in the Papuan-Australian region, though structure of aedeagus is extremely similar to those of *L. subglabra*, spec. nov. from New Guinea and *L. novabritannica*, spec. nov. from New Britain.

Lebia permutata, spec. nov.

Figs 15, 33, 47

Types. Holotype: ♂, Irian Jaya, Waropen Pr., Wapoga Riv. Kwadewa, km 62, Lux, 28.2.1999, A. Riedel (ZSM-CBM).

Diagnosis. Comparatively large, narrowly clouded species without microreticulation on head and pronotum; distinguished from related species by the very narrow, quadrate prothorax, the very acute apex of the aedeagus, and presence of a single, partly denticulate sclerite at roof of internal sac.

Description

Measurements. Length: 6.3 mm; width: 3.0 mm. Ratios: w/l pr: 1.34; w pr/h: 1.0; l/w el: 1.37; w el/pr: 2.09.

Colour (Fig. 33). Fore body and lower surface reddish, palpi, antennae, and legs light reddish. Surface of elytra reddish, with an indefinite, narrow, brownish cloud that extends from near base, occupies the 2nd and 3rd intervals, and leaves the apex widely light. Lateral margins of pronotum and elytra slightly lighter, yellowish.

Head. Of average size and shape, as wide as pronotum. Eyes very large, semicircular. Antennae of moderate size, surpassing basal angles of pronotum by about 2 antennomeres. Labrum in middle near base very slightly impressed. Frons on either side with a circular impression behind clypeal suture and another behind near middle. Groove of anterior suprorbital seta large and deep. Surface without microreticulation, but with very scattered and fine punctures, highly glossy.

Pronotum (Fig. 47). Narrow, not wider than head, remarkably quadrate, widest at middle. Apical angles widely rounded off, lateral margin gently

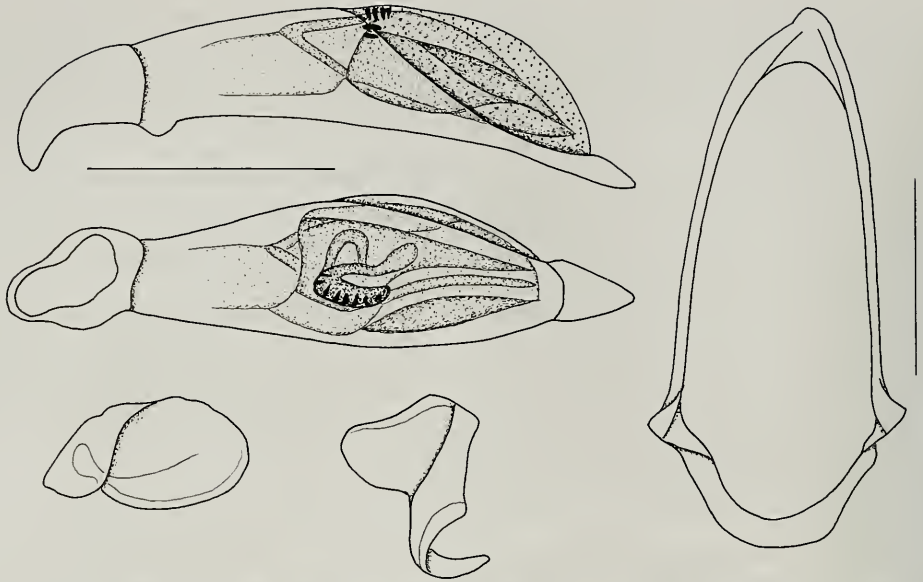


Fig. 15. *L. permutata*, spec. nov. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

convex anteriorly, then almost straight, faintly sinuate in front of the rectangular basal angles. Base in middle much produced, this part relatively wider than usual, lateral excision deep, lateral parts of base transversal, gently convex. Apex margined except in middle, base distinctly margined, lateral margin narrowly explanate throughout, marginal channel slightly widened towards base, moderately deep. Surface with a distinct prebasal transverse sulcus. Disk only with highly superficial traces of microreticulation, with rather dense, fairly distinct transverse wrinkles and with very scattered punctures, surface highly glossy.

Elytra. Medium sized (for group), rather oval-shaped, markedly widened towards apex, widest well behind middle. Upper surface moderately convex. Humeri rounded, lateral margin obliquely convex, barely incised at basal third, apex very little sinuate, apical angles widely rounded, apical margin slightly incurved at suture. Striae complete, deep, at bottom barely crenulate. Intervals convex throughout. 3rd interval bipunctate, punctures situated at 3rd stria. Series of marginal punctures not interrupted in middle. Intervals with moderately distinct, markedly transverse microreticulation and very scattered punctures, rather glossy. Inner wings fully developed.

Lower surface. Metepisternum elongate, almost 2× as long as wide. Abdomen very sparsely punctate and pilose, pilosity barely denser on terminal

sternite. Terminal sternite 4-setose in male.

Legs. Of moderate size. 4th tarsomeres very deeply excised. Tarsal claws with 5 large teeth.

Male genitalia (Fig. 15). Genital ring large, rather narrow and elongate, gently asymmetric, narrowed towards apex, with narrow, obtuse apex and narrow, elongate basis. Aedeagus moderately elongate, asymmetrically widened in middle, barely sinuate, lower surface almost straight, very gently concave at base of apex. Apex moderately elongate, depressed, straight, markedly triangular, slightly twisted. Orificium elongate. Folding of internal sac complex, with a partly denticulate, folded plate in middle at roof. Parameres of dissimilar shape, left paramere fairly elongate, with somewhat obtuse apex; right paramere short but massive, asymmetrically rhomboidal.

Variation. Unknown.

Distribution. Western Irian Jaya. Known only from type locality.

Collecting circumstances. The holotype was collected at light.

Etymology. The name refers to the high possibility to confound this species with certain quite similar New Guinean *Lebia*.

Relationships. This species is fairly unique and certainly less closely to any of the species of the *papua-na*-group than all other species.

Lebia inornata, spec. nov.

Fig. 48

Types. Holotype: ♂ (immature), IRIAN JAYA, Sorong-
Prov., leg. A. Riedel, 1996/Salawati Isl. Solol, 0-350 m,
6-7.XI. (ZSM-CBM).

Diagnosis. Comparatively large, unicolourous yellowish species with dense and distinct microreticulation on head and pronotum; distinguished from related species by the laterally markedly rounded, not sinuate pronotum.

Description

Measurements. Length: 5.6 mm; width: 2.8 mm. Ratios: w/l pr: 1.50; w pr/h: 1.25; l/w el: 1.30; w el/pr: 1.85.

Colour. Upper and lower surface uniformly yellowish (perhaps due to immaturity).

Head. Of average size and shape, narrower than pronotum. Eyes very large, semicircular. Antennae of moderate size, surpassing basal angles of pronotum by about 2 antennomeres. Labrum in middle near base very slightly impressed. Frons without definite impressions, though surface with dense and complete, though rather superficial, isodimetric microreticulation and with very scattered and fine punctures, fairly glossy.

Pronotum (Fig. 48). Moderately wide, wider than head, widest slightly behind middle. Apical angles very widely rounded off, lateral margin almost completely convex, barely sinuate in front of the rectangular basal angles. Base in middle much produced, lateral excision deep, lateral parts of base transversal, gently convex. Apex margined except in middle, base distinctly margined, lateral margin rather wide and explanate throughout, marginal channel widened towards base, moderately deep. Surface with a distinct prebasal transverse sulcus. Disk with rather dense, moderately superficial, slightly transverse microreticulation, with dense, fairly distinct transverse wrinkles and with very scattered punctures, surface moderately dull.

Elytra. Rather short and wide (for group), oval-shaped, markedly widened towards apex, widest well behind middle. Upper surface moderately convex. Humeri rounded, lateral margin obliquely convex, barely incised at basal third, apex very little sinuate, apical angles widely rounded, apical margin slightly incurved at suture. Striae complete, deep, at bottom barely crenulate. Intervals convex throughout. 3rd interval bipunctate, punctures situated at 3rd stria. Series of marginal punctures not interrupted in middle. Intervals with moderately distinct, markedly transverse microreticulation and very scattered punctures, moderately glossy. Inner wings fully developed.

Lower surface. Metepisternum elongate, almost 2 × as long as wide. Abdomen very sparsely punctate and pilose, pilosity barely denser on terminal sternite. Terminal sternite 4-setose in male.

Legs. Of moderate size. 4th tarsomeres very deeply excised. Tarsal claws with 4, rarely 5 large teeth.

Male genitalia. Due to immaturity of holotype aedeagus not well preserved nor sclerotized.

Variation. Unknown.

Distribution. Salawati Island, off the west coast of New Guinea. Known only from type locality.

Collecting circumstances. Largely unknown, holotype most probably collected by sifting in rain forest at low altitude.

Etymology. The name refers to the absence of any distinct elytral pattern.

Relationships. Due to the unknown male genitalia, the nearest relatives are yet uncertain, though this species is probably closely related to the New Guinean species mentioned above.

Lebia laticollis, spec. nov.

Figs 16, 49

Types. Holotype: ♂, 15.29S 145.16E Mt. Cook Nat. Pk. Cooktown Q. 11-12 Oct. 1980 J. C. Cardale ex ethanol (ANIC). – Paratypes: 1♀, N. E. Qld: 19.16S, 147.03E, Mt Cleveland summit, 23 Mar 1991. Monteith. Pyrethr. Rain For. 500 m (QMB); 3♂♂, MEW: 21°35'S × 149°11'E, Cameron Creek, upper, 100 m, 1.Oct 1999. GB Monteith, pyrethrum trees, rainforest. 7793 (CBM, QMB); 1♂, SEQ: 23°37'S × 150°28'E, Mt. Gavial, 3 km SSW, 27 Sep 1999. 320 m, G.B. Monteith, vinescrtub pyrethrum-trees. 7772 (QMB); 1♂, 15/4/Bamaga, N.Q. Jan, 1984 J. H. Sedlacek (QMB).

Diagnosis. Rather small, unicolourous reddish species with dense and rather distinct microreticulation on head and pronotum; distinguished from related species by the remarkably wide, near base not sinuate pronotum.

Description

Measurements. Length: 4.5-4.8 mm; width: 2.2-2.4 mm. Ratios: w/l pr: 1.67-1.69; w pr/h: 1.30-1.32; l/w el: 1.31-1.34; w el/pr: 1.66-1.70.

Colour. Whole upper and lower surface, including mouth parts, palpi, and antennae light reddish. Femora yellow, tibiae reddish, perceptibly darker than femora. Surface of elytra without any colour pattern.

Head. Of average size and shape, clearly narrower than pronotum. Eyes very large, semicircular.



Fig. 16. *L. laticollis*, spec. nov. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

lar. Antennae of moderate size, surpassing basal angles of pronotum by about 2 antennomeres. Labrum in middle not impressed. Frons on either side with a circular impression behind clypeal suture and another elongate and slightly sinuate impression near middle. Surface with dense though rather superficial isodiametric microreticulation, with scattered but rather coarse punctures, moderately glossy.

Pronotum (Fig. 49). Unusually wide, considerably wider than head, widest at middle, but barely narrower towards base. Apical angles very widely rounded off, lateral margin anteriorly very convex, from middle almost straight, not sinuate in front of the rectangular basal angles. Base in middle much produced, lateral excision deep, lateral parts of base transversal, gently convex. Apex margined except in middle, base distinctly margined, lateral margin widely explanate throughout, marginal channel even widened towards base, rather shallow. Surface with a distinct prebasal transverse sulcus. Disk with distinct, though somewhat superficial, isodiametric microreticulation, with fairly dense, rather coarse, irregular wrinkles and with very scattered punctures, surface moderately dull.

Elytra. Medium sized (for group), rather oval-shaped, markedly widened towards apex, widest well behind middle. Upper surface moderately convex. Humeri rounded, lateral margin obliquely convex, barely incised at basal third, apex very little sinuate, apical angles widely rounded, apical margin slightly incurved at suture. Striae complete, deep, at bottom barely crenulate. Intervals convex throughout.

3rd interval bipunctate, punctures situated at 3rd stria. Series of marginal punctures not interrupted in middle. Intervals with distinct, moderately transverse microreticulation and very scattered punctures, rather glossy. Inner wings fully developed.

Lower surface. Metepisternum elongate, almost 2× as long as wide. Abdomen sparsely punctate and pilose, pilosity slightly denser on terminal sternite. Terminal sternite in male 2-setose, in female 4-setose.

Legs. Of moderate size. 4th tarsomeres very deeply excised. Tarsal claws with 4 large teeth.

Male genitalia (Fig. 16). Very small in comparison. Genital ring large, rather elongate, rather symmetric, laterally absolutely parallel, with rather wide, almost evenly convex apex and narrow, elongate, slightly asymmetric basis. Aedeagus rather elongate, slightly widened in middle, barely sinuate, lower surface almost straight. Apex moderately elongate, depressed, straight, rather wide, at tip rounded. Orificium comparatively short. Folding of internal sac complex, with two remarkably coiled, densely denticulate sclerites in middle. Parameres of dissimilar shape, left paramere narrow and elongate in comparison, longer than right one, with obtusely triangular apex; right paramere short, rhomboidal, with produced, comparatively narrow apex.

Variation. Very little variation noted.

Distribution. Eastern Queensland, Australia.



Fig. 17. *L. atripennis*, spec. nov. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

Collecting circumstances. Most specimens captured by pyrethrum knockdown on logs in rain forest of median altitude.

Etymology. The name refers to the very wide pronotum of this species.

Relationships. With regard to body shape as well as to structure of male aedeagus, this species is quite unique within the Australian-New Guinean *Lebia*, and close relatives are so far unknown.

Lebia atripennis, spec. nov.

Figs 17, 34

Types. Holotype: ♂, PNG: New Ireland Pr., New Ireland, 5 km SE Kamiraba, Lelet Plateau/600-800 m, 03°15'33"S, 151°55'32"E, 11.III.2000, leg. A. Weigel KL (ZSM-CBM).

Diagnosis. Rather small, reddish species with contrasting black elytra; further distinguished from related species by a complexly coiled, very densely denticulate sclerite in middle of internal sac of aedeagus.

Description

Measurements. Length: 4.5 mm; width: 2.2 mm. Ratios: w/l pr: 1.64; w pr/h: 1.28; l/w el: 1.27; w el/pr: 1.67.

Colour (Fig. 34). Fore body, lower surface, mouth parts, palpi, and antennae light reddish. Elytra completely and contrastingly unicolourous black, ex-

cept for the very base, scutellum, and a narrow spot behind scutellum which are reddish. Femora yellow, tibiae reddish, slightly darker than femora.

Head. Of average size and shape, perceptibly narrower than pronotum. Eyes very large, semicircular. Antennae of moderate size, surpassing basal angles of pronotum by about 2 antennomeres. Labrum in middle barely impressed. Frons without distinct impressions, but rather uneven. Surface with dense though somewhat superficial isodiametric microreticulation, with scattered fine punctures, moderately glossy.

Pronotum. Wide, distinctly wider than head, widest at middle, slightly narrowed towards base. Apical angles very widely rounded off, lateral margin anteriorly very convex, from middle gently convex, not sinuate in front of the rectangular basal angles. Base in middle much produced, lateral excision deep, lateral parts of base transversal, gently convex. Apex margined except in middle, base distinctly margined. Lateral margin narrow in apical half, explanate posteriorly, marginal channel markedly widened towards base, rather shallow. Surface with a distinct prebasal transverse sulcus. Disk with distinct isodiametric microreticulation, with fairly dense, rather coarse, irregular wrinkles and with very scattered punctures, surface moderately dull.

Elytra. Rather short (for group), oval-shaped, markedly widened towards apex, widest well behind middle. Upper surface rather convex. Humeri rounded, lateral margin obliquely convex, not incised at basal third, apical angles widely rounded,



Fig. 18. *L. trivittata*, spec. nov. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

apex not at all sinuate, transverse and almost straight, apical margin not incurved at suture. Striae complete, deep, at bottom barely crenulate. Intervals convex throughout. 3rd interval bipunctate, punctures situated at 3rd stria. Series of marginal punctures not interrupted in middle. Intervals with distinct, decidedly transverse microreticulation and very scattered punctures, rather glossy. Inner wings fully developed.

Lower surface. Metepisternum moderately elongate, less than 2 × as long as wide. Abdomen sparsely punctate and pilose, pilosity slightly denser on terminal sternite. Terminal sternite 4-setose in male. Legs. Of moderate size. 4th tarsomeres very deeply excised. Tarsal claws with 4 large teeth.

Male genitalia (Fig. 17). Genitalia comparatively small. Genital ring large, narrow and elongate, parallel, almost symmetric, with evenly convex apex and narrow, elongate basis. Aedeagus moderately elongate, slightly widened in middle, barely sinuate, lower surface straight, laterally slightly incised towards apex. Apex moderately elongate, depressed, straight, obtusely triangular. Orificium moderately elongate. Folding of internal sac complex, with a complexly coiled, very densely denticulate sclerite in middle. Parameres of dissimilar shape, left paramere rather short in comparison, though longer than right one, with triangular apex; right paramere short, with obtuse apex.

Variation. Unknown.

Distribution. New Ireland. Known only from type locality.

Collecting circumstances. Largely unknown. The holotype was collected at median altitude, presumably in rain forest.

Etymology. The name refers to the uniformly black elytra.

Relationships. Concerning its external characters this species is closely related to the New Guinean species mentioned above, though the male genitalia are rather unique. Hence, this species may be rather isolated within the Australian-Papuan *Lebia*.

***Lebia trivittata*, spec. nov.**

Figs 18, 35

Types. Holotype: ♂, Coll. I.R.Sc.N.B. Sulawesi, Utara, Hogg's Back (660 m), Sweeping, 23.X.1985, Leg. J. Van Stalle (IRSNB). - Paratypes: 2♂♂, 6♀♀, same data (CBM, IRSNB).

Diagnosis. Medium sized, yellow species with a contrasting dark, trivittate elytral pattern; further distinguished from related species including the fairly similarly patterned *L. adusta*, spec. nov., but except for *L. subglabra*, spec. nov., by two transverse, densely denticulate sclerites in middle at bottom of internal sac of aedeagus, and another plate that is strongly sclerotized at its left margin.

Description

Measurements. Length: 5.0-5.7 mm; width: 2.45-2.7 mm. Ratios: w/l pr: 1.38-1.46; w pr/h: 1.16-1.21; l/w el: 1.35-1.41; w el/pr: 1.90-2.0.

Colour (Fig. 35). Upper and lower surface, including mouth parts, palpi, antennae, and legs yellow. Elytra with a distinct pattern of three dark piceous to black vittae, one sutural and two submarginal ones which are united in posterior quarter and leave the apex broadly light.

Head. Of average size and shape, narrower than pronotum. Eyes very large, semicircular. Antennae of moderate size, surpassing basal angles of pronotum by almost 3 antennomeres, median antennomeres almost twice as long as wide. Labrum in middle gently impressed. Frons without distinct impressions, but with some shallow, longitudinal wrinkles near the eyes. Surface with distinct isodiametric microreticulation, impunctate, moderately glossy.

Pronotum. Comparatively narrow, slightly wider than head, widest at middle, slightly narrowed towards base. Apical angles widely rounded off, lateral margin anteriorly very convex, from middle gently almost straight to very gently sinuate in front of the rectangular basal angles. Base in middle much produced, lateral excision deep, lateral parts of base transversal, rather convex. Apex not margined, base margined though indistinctly in middle. Lateral margin explanate throughout, explanation considerably widened towards base, marginal channel fairly deep. Surface with a distinct prebasal transverse sulcus and slightly impressed median line. Disk with distinct, about isodiametric microreticulation, and with very fine, more or less irregular transverse wrinkles, apparently impunctate, surface moderately glossy.

Elytra. Rather short and wide (for group), oval-shaped, markedly widened towards apex, widest well behind middle. Upper surface rather convex. Humeri rounded, lateral margin obliquely convex, barely incised at basal third, apical angles widely rounded, apex gently sinuate, apical margin slightly incurved at suture. Striae complete, deep, at bottom barely crenulate. Intervals convex throughout. 3rd interval bipunctate, punctures situated at 3rd stria. Series of marginal punctures not interrupted in middle. Intervals with distinct, gently transverse microreticulation and very scattered punctures, rather glossy. Inner wings fully developed.

Lower surface. Metepisternum elongate, about 2× as long as wide. Abdomen sparsely punctate and pilose, pilosity slightly denser on terminal sternite. Terminal sternite in male 4-setose, in female 6-setose.

Legs. Of moderate size. 4th tarsomeres very

deeply excised. Tarsal claws with 3 large and one additional smaller teeth.

Male genitalia (Fig. 18). Genitalia extremely similar to those of *L. subglabra*, spec. nov. Genital ring large, rather elongate, fairly asymmetric, remarkably widened towards apex, with wide, oblique and convex apex and narrow, semilunar basis. Aedeagus rather narrow and elongate, slightly widened in middle, barely sinuate, lower surface straight, very gently concave in apical third. Apex rather elongate, depressed, straight, triangular. Orificium elongate. Folding of internal sac complex, with two transverse, very densely denticulate sclerites in middle at bottom, and another plate that is strongly sclerotized at its anterior margin. Parameres of dissimilar shape, left paramere short in comparison, though longer than right one, with triangular apex; right paramere short but massive, rhomboidal.

Variation. Apart from some differences in size, little variation noted.

Distribution. Sulawesi. Known only from type locality.

Collecting circumstances. All specimens collected by "sweeping" (vegetation).

Etymology. The name refers to the trivittate elytral pattern.

Relationships. With respect to elytral pattern, this species is very similar to the syntopic *L. adusta*, spec. nov., though structure of aedeagus is extremely similar to that of *L. subglabra*, spec. nov. from New Guinea.

Lebia adusta, spec. nov.

Figs 19, 36

Types. Holotype: ♂, Coll. I.R.Sc.N.B. Sulawesi, Utara, Hogg's Back (660 m), Sweeping, 23.X.1985, Leg. J. Van Stalle (IRSNB). – Paratype: 1♀, same data (CBM).

Diagnosis. Rather small, yellow species with a little contrasting dark, trivittate elytral pattern; further distinguished from related species including the fairly similarly patterned *L. trivittata*, spec. nov. by the absence of any sclerotized or denticulate plates in the internal sac.

Description

Measurements. Length: 4.2-4.3 mm; width: 2.0-2.05 mm. Ratios: w/l pr: 1.43-1.44; w pr/h: 1.20-1.21; l/w el: 1.35-1.37; w el/pr: 1.92-1.93.

Colour (Fig. 36). Upper and lower surface, including mouth parts, palpi, antennae, and legs yellow. Elytra with a somewhat faded pattern of three



Fig. 19. *L. adusta*, spec. nov. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

dark piceous to black vittae, one sutural and two submarginal ones which are united in posterior quarter and leave the apex broadly light.

Head. Of average size and shape, narrower than pronotum. Eyes very large, semicircular. Antennae of moderate size, surpassing basal angles of pronotum by about 2 antennomeres, median antennomeres about 1.5× as long as wide. Labrum in middle gently impressed. Frons without distinct impressions and without any longitudinal wrinkles near eyes. Surface with rather distinct isodiametric microreticulation, impunctate, fairly glossy.

Pronotum. Comparatively narrow, slightly wider than head, widest at middle, slightly narrowed towards base. Apical angles widely rounded off, lateral margin anteriorly very convex, from middle gently almost straight to very gently sinuate in front of the rectangular basal angles. Base in middle much produced, lateral excision deep, lateral parts of base transversal, rather convex. Apex not margined, base margined throughout. Lateral margin explanate throughout, explanation considerably widened towards base, marginal channel fairly deep. Surface with a distinct prebasal transverse sulcus and slightly impressed median line. Disk with rather distinct, about isodiametric microreticulation, and with very fine, more or less irregular transverse wrinkles, apparently impunctate, surface fairly glossy.

Elytra. Rather short and wide (for group), oval-shaped, markedly widened towards apex, widest

well behind middle. Upper surface rather convex. Humeri rounded, lateral margin obliquely convex, barely incised at basal third, apical angles widely rounded, apex gently sinuate, apical margin slightly incurved at suture. Striae complete, deep, at bottom barely crenulate. Intervals convex throughout. 3rd interval bipunctate, punctures situated at 3rd stria. Series of marginal punctures not interrupted in middle. Intervals with distinct though somewhat superficial, gently transverse microreticulation and very scattered punctures, rather glossy. Inner wings fully developed.

Lower surface. Metepisternum elongate, almost 2× as long as wide. Abdomen sparsely punctate and pilose, pilosity slightly denser on terminal sternite. Terminal sternite in male 4-setose, in female 6-setose.

Legs. Of moderate size. 4th tarsomeres very deeply excised. Tarsal claws with 3 large teeth.

Male genitalia (Fig. 19). Genital ring elongate, narrow, slightly asymmetric, with rather wide, oblique and convex apex and narrow, elongate basis. Aedeagus elongate, widened in middle, barely sinuate, lower surface very gently concave. Apex symmetric, straight, moderately elongate, wide, depressed, tip obtuse. Orificium elongate. Folding of internal sac complex, but without any remarkably sclerotized or denticulate plates. Parameres of dissimilar shape, left paramere elongate in comparison, though larger than right one, with triangular

apex; right paramere short but massive, rhomboidal, with characteristically produced apex.

Variation. Due to scarce material little variation noted.

Distribution. Sulawesi. Known only from type locality.

Collecting circumstances. Collected by "sweeping" (vegetation).

Etymology. The name refers to the slightly darkened elytra of the species.

Relationships. With respect to elytral pattern, this species is very similar to the syntopic *L. trivittata*, spec. nov., though structure of aedeagus is unique within the examined group of species.

calycophora-group

A group of rather small, mainly Oriental species bearing a characteristic dark elytral pattern on yellow or light reddish ground. Apart from the species described below, several additional species exist in South and East Asia.

Measurements and ratios see table 2.

Lebia sedlaceki, spec. nov.

Fig. 37

Types. Holotype (slightly damaged): ♀, AUST., N. QLD, Bamaga, i.1984, J. H. Sedlacek (QMT123517).

Diagnosis. Rather small, yellow species, characterized by the contrasting, black elytral pattern of an narrow, elongate sutural stripe and an isolated lateral spot on either side behind middle.

Description

Measurements. Length: 4.75 mm; width: 2.3 mm. Ratios: w/l pr: 1.51; w pr/h: 1.17; l/w el: 1.36; w el/pr: 1.92.

Colour (Fig. 37). Upper and lower surface, including mouth parts, palpi, antennae, and legs light reddish. Elytra with a narrow brown sutural spot that is slightly widened near base and in apical half but does not attain the apex, and with an elongate, oval-shaped spot on either side behind middle on 5th-7th intervals.

Head. Of average size and shape, slightly narrower than pronotum. Eyes very large, semicircular. Antennae of moderate size, surpassing basal angles of pronotum by about 2 antennomeres. Labrum in middle gently impressed. Frons without distinct impressions, but somewhat uneven. Sur-

face with distinct though somewhat superficial isodiametric microreticulation, with scattered, very fine punctures, fairly glossy.

Pronotum. Moderately wide, slightly wider than head, widest at middle, slightly narrowed towards base. Apical angles widely rounded off, lateral margin anteriorly very convex, from middle gently convex, slightly sinuate in front of the about rectangular basal angles. Base in middle much produced, lateral excision deep, lateral parts of base transverse, laterally towards angles gently convex. Apex margined except in middle, base distinctly margined. Lateral margin moderately wide, explanate, explanation widened towards base, marginal channel moderately deep. Surface with a distinct prebasal transverse sulcus. Disk with distinct, about isodiametric microreticulation, with very fine, rather irregular wrinkles and with very scattered punctures, surface rather dull.

Elytra. Medium sized (for group), oval-shaped, markedly widened towards apex, widest well behind middle. Upper surface rather convex. Humeri rounded, lateral margin obliquely convex, barely incised at basal third, apical angles widely rounded, apex gently sinuate, apical margin slightly incurved at suture. Striae complete, deep, at bottom barely crenulate. Intervals convex throughout. 3rd interval bipunctate, punctures situated at 3rd stria. Series of marginal punctures not interrupted in middle. Intervals with distinct, almost isodiametric to gently transverse microreticulation and very scattered punctures, rather dull. Inner wings fully developed. Lower surface. Metepisternum rather elongate, almost 2 × as long as wide. Abdomen sparsely punctate and pilose, pilosity denser on terminal sternite. Terminal sternite 6-setose in female.

Legs. Of moderate size. 4th tarsomeres very deeply excised. Tarsal claws with 4 large teeth.

Male genitalia. Unknown.

Variation. Unknown.

Distribution. Northern tip of Cape York Peninsula, northern Queensland, Australia. Known only from type locality.

Collecting circumstances. Unknown.

Etymology. The name honours the collector of this and of a multitude of other species throughout New Guinea, the late J. Sedlacek.

Relationships. In structure of elytral pattern this species is similar to the oriental *L. calycophora* Schmidt-Göbel and its allies. As the male genitalia are still unknown, relationships at present remain uncertain.

foveipennis-group

A group of unknown relationships. Both species described below are closely related and form a group of strangely shaped *Lebia* that are distinguished by the great number of large, foveate setiferous punctures on the odd elytral intervals, and the wide, laterally explanate pronota. I do not know any *Lebia*'s of similar appearance in the Oriental and Australian regions.

Measurements and ratios see table 3.

Lebia foveipennis, spec. nov.

Figs 20, 38

Types. Holotype: ♂, Mt. Spec. N.Q. 4/69. GB./m 85./*Lebia papuensis* Macl. det. B. P. Moore '69. /*papuensis* Macl 1303./J. G. Brooks Bequest, 1976 (ANIC). – Paratypes: 1♀, Ewan Rd. 10-12 mls. W. of Paluma, N.Q. 4-6.i.66. J. G. and J. A. G. Brooks (ANIC); 1♀, Paluma Range, 900 m, 75 km nw. Townsville, n.Qld., Australien, 25.12.81-18.1.1982, M. Baehr (CBM); 1♀, Mt. Fisher, 7 km SW Millaa Millaa NQ (Whiteing Rd) 5 May 1983, G. B. Monteith, D. K. Yeates/QM berlesate No. 584, 17.34S 145.34E, Rainforest 1200 m, sieved litter (QMB).

Diagnosis. Large, uniformly brown to piceous species with setose and characteristically interrupted odd intervals; distinguished from related *L. monteithi*, spec. nov. by smaller and narrower head and pronotum, posteriorly produced basal angles of pronotum, not longitudinally impressed elytral intervals, trisetose 3rd, bisetose 5th, but asetose 7th intervals, absence of microreticulation on the elytra, and smaller aedeagus with a wide, very densely denticulate, transverse band that is only narrowly interrupted at left side of bottom of internal sac.

Description

Measurements. Length: 7.3-7.7 mm; width: 3.3-3.7 mm. Ratios: w/l pr: 1.55-1.58; w pr/h: 1.31-1.40; l/w el: 1.36-1.42; w el/pr: 1.68-1.72.

Colour (Fig. 38). Chestnut brown with commonly slightly darker head and centre of pronotum. Mouth parts, antennae, and legs of same brown colour.

Head. Elongate, rather narrow in comparison to pronotum. Eyes large, projecting, though not semicircular, orbits small though present, oblique. An-

tennae of moderate size, surpassing basal angles of pronotum by almost 3 antennomeres. Labrum in middle gently impressed. Frons without shallow impressions, somewhat uneven, in middle with very shallow, v-shaped impression. Surface without any microreticulation, with extremely scattered, barely discernable punctures, highly glossy.

Pronotum. Wide, considerably wider than head, widest in anterior third, evenly narrowed towards base. Apical angles produced, widely rounded off, lateral margin anteriorly very convex, from middle gently convex, without any sinuation in front of the about rectangular though at tip obtuse basal angles. Base in middle very much produced, lateral excision deep, lateral parts of base transversal to slightly oblique, because the basal angles are somewhat produced backwards. Apex margined throughout, base coarsely margined. Lateral margin very wide, explanate, explanation little widened towards base, marginal channel moderately deep. Apical angles with some short, inconspicuous hairs along margin. Surface with shallow anterior and quite deep pre-basal transverse sulcus and with well impressed median line. Disk without any microreticulation, surface rather uneven, in particular in marginal channel which is covered by irregular wrinkles and very coarse scattered punctures, surface highly glossy.

Elytra. Comparatively elongate (for group), oval-shaped, markedly widened towards apex, widest well behind middle. Upper surface moderately convex. Humeri rounded, lateral margin obliquely convex, barely incised at basal third, apical angles widely rounded, apex gently sinuate, apical margin slightly incurved at suture. Striae complete, deep, at bottom barely crenulate. Intervals evenly convex throughout. 3rd tripunctate, 5th interval bipunctate, punctures very wide, foveiform. Series of marginal punctures not interrupted in middle. Intervals without any microreticulation, with scattered fine and rather coarse punctures, highly glossy. Inner wings fully developed.

Lower surface. Metepisternum rather elongate, about 1.5 × as long as wide. Abdomen sparsely punctate and pilose, pilosity denser on terminal sternite. Terminal sternite in male 4-setose, in female 6-setose.

Legs. Of moderate size. 4th tarsomeres very deeply excised. Tarsal claws with 5 comparatively small teeth.

Table 3. Measurements and ratios of the species of the *foveipennis*-group.

	N	length	w/l pr	w pr/h	l/w el	w el/pr
<i>foveipennis</i>	4	7.3-7.7	1.55-1.58	1.31-1.40	1.36-1.42	1.68-1.72
<i>monteithi</i>	6	7.9-9.1	1.65-1.69	1.31-1.39	1.42-1.45	1.65-1.68



Fig. 20. *L. foveipennis*, spec. nov. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

Male genitalia (Fig. 20). Genital ring large, rather elongate, slightly asymmetric, with rather narrow, obtuse apex and moderately elongate basis. Aedeagus moderately elongate, rather compact, widened in middle, barely sinuate, lower surface basally almost straight, gently concave in apical third. Apex rather elongate, depressed, straight, slightly spoon-shaped. Orificium moderately elongate. Folding of internal sac complex, with a very wide, transverse, remarkably sinuate, very densely denticulate band that is only narrowly interrupted at left side of bottom. Parameres of dissimilar shape, left paramere elongate in comparison, longer than right one, with triangularly convex apex; right paramere short but massive, rhomboidal.

Variation. Rather little variation noted.

Distribution. Northeastern Queensland from Mt. Spec plateau to Atherton Tableland, Australia.

Collecting circumstances. One specimen collected by Berlese extraction from rainforest litter, another captured at light. All four recorded specimens sampled in upland rain forests.

Etymology. The name refers to the conspicuous setiferous pits on the odd intervals.

Relationships. Very closely related to *L. monteithi*, spec. nov. that lives in the same area.

***Lebia monteithi*, spec. nov.**

Figs 21, 39

Types. Holotype: ♂, AUST: QLD: NE, 10 km W Bones Knob, 10 Dec 1995, Cook, Monteith & Thompson/QM BERLESATE 902, 17°13'S × 145°25'E, Rainforest, 1100 m, Leaf Litter (QMT123515). – Paratypes: 1♀, same data (CBM); 1♀, NEQ: 16°35'S × 145°16'E, Upper Leichhardt Creek, 18 Nov. 1997, 840 m, G. B. Monteith 1627 Pyreth. on Bunya Pines (QMB); 1♀, NEQ: 16°34'S × 145°18'E, Mt. Lewis Rd., 16 km from Highway, 18 Nov. 1997, 840 m, G. B. Monteith 1629 Pyrethrum, trees & logs (QMB); 1♀, NEQ: 17°27'S × 145°29'E, Tower nr. The Crater NP, 10 Jan 1995 – 31 Mar 1995, Monteith & Hasenpusch, Flt. intercept trap, 1230 m (QMB); 1♀, Windsor Tbird., 35 km NNW Mt. Carbine, N. Qld. 25–26 Apr., 1982, 1050 m, 1♂, Mt. Fisher, 1050–1100 m, 7 km SW Millaa Millaa, N.Q. 27–29 Apr., 1982, Monteith, Yeates & Cook, Pyrethrum knockdown (QMB); 1♂, Charmillin Ck. Xing, 950 m, Tully Falls Rd., N. QLD 8 Dec 1989 – 5 Jan 1990, Monteith, Thompson & Janetzki, Pitfall & Intercept Traps (QMB); 1♀, Hinchinbrook Is, NE. QLD. Gayundah Ck. 10 m, 7–15 Nov 1984, Monteith, Cook & Thompson (QMB); 7♂♂, 8♀♀, QLD: 16°35'S × 145°16'E Leichhardt Creek, upper 28 May 2003, G. B. Monteith Pyrethrum on Bunya Pine trunks, 1131 (CBM, QMB).

Diagnosis. Large, uniformly brown to piceous species with setose and characteristically interrupted odd intervals; distinguished from related *L. foveipennis*, spec. nov. by larger and wider head and pronotum, not produced basal angles of pronotum, longitudinally impressed elytral intervals, multisetose

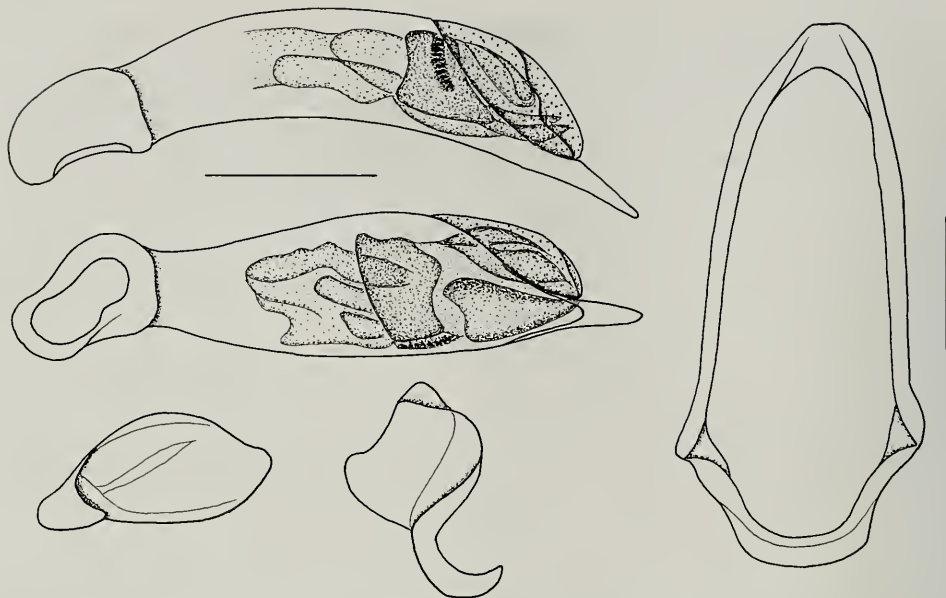


Fig. 21. *L. monteithi*, spec. nov. Male genitalia: Aedeagus, lateral from left side, and ventral; parameres; genital ring. Scales: 0.5 mm.

3rd, 5th, and 7th, intervals, presence of microreticulation on the elytra, and larger aedeagus with a narrow denticulate band that is widely interrupted at lower left side and at bottom of internal sac.

Description

Measurements. Length: 7.9-9.1 mm; width: 3.7-4.3 mm. Ratios: w/l pr: 1.65-1.69; w pr/h: 1.31-1.39; l/w el: 1.42-1.45; w el/pr: 1.65-1.68.

Colour (Fig. 39). Chestnut brown to piceous with commonly slightly darker head and centre of pronotum. Mouth parts, antennae, and legs reddish-brown.

Head. Large and comparatively short, though rather narrow in comparison to pronotum. Eyes large, projecting, though not fully semicircular, orbits small though present, oblique. Antennae of moderate size, surpassing basal angles of pronotum by about 3 antennomeres. Labrum in middle gently impressed. Frons without shallow impressions, somewhat uneven, in middle with very shallow, v-shaped impression. Surface without any microreticulation, with extremely scattered, barely discernable punctures, highly glossy.

Pronotum. Very wide, considerably wider than head, widest in anterior third, evenly narrowed towards base. Apical angles produced, widely rounded off, lateral margin anteriorly very convex, from middle gently convex, without any sinuation in front of the very obtuse basal angles. Base in middle very

much produced, lateral excision deep, lateral parts of base slightly convex, basal angles not produced backwards. Apex very inconspicuously margined, base coarsely margined. Lateral margin very wide, explanate, explanation little widened towards base, marginal channel moderately deep. Apical angles with some short, inconspicuous hairs along margin. Surface with shallow anterior and quite deep pre-basal transverse sulcus and with well impressed median line. Disk without any microreticulation, surface rather uneven, in particular in marginal channel which is covered by irregular wrinkles and very coarse scattered punctures, surface highly glossy.

Elytra. Comparatively elongate (for group), oval-shaped, markedly widened towards apex, widest well behind middle. Upper surface moderately convex. Humeri rounded, lateral margin obliquely convex, barely incised at basal third, apical angles widely rounded, apex gently sinuate, apical margin slightly incurved at suture. Striae complete, deep, at bottom barely crenulate. Intervals convex though irregularly longitudinally impressed in middle. 3rd, 5th, and 7th intervals multipunctate, punctures very wide, foveiform. Series of marginal punctures not interrupted in middle. Intervals with rather distinct, slightly transverse microreticulation, with scattered fine and rather coarse punctures, glossy. Inner wings fully developed.

Lower surface. Metepisternum rather elongate, about 1.5 × as long as wide. Abdomen sparsely punc-

tate and pilose, pilosity denser on terminal sternite. Terminal sternite in male 4-setose, in female 6-setose.

Legs. Of moderate size. 4th tarsomeres very deeply excised. Tarsal claws with 5 comparatively small teeth.

Male genitalia (Fig. 21). Genital ring large, rather elongate, barely asymmetric, with fairly wide, obtuse apex and moderately elongate basis. Aedeagus moderately elongate, rather compact, widened in middle, barely sinuate, lower surface basally almost straight, gently concave in apical third. Apex rather elongate, depressed, straight, obtuse at tip. Orificium moderately elongate. Folding of internal sac complex, with a narrow, transverse, remarkably sinuate, denticulate band that is widely interrupted at lower left side and at bottom. Parameres of dissimilar shape, left paramere elongate in comparison, longer than right one, with triangularly convex apex; right paramere short but massive, rhomboidal, with triangularly projecting apex.

Variation. Apart from some differences in body size, little variation noted.

Distribution. Northeastern Queensland from Windsor Tableland and Mt. Lewis in the north down to Hitchinbrook Island north of Ingham, Australia.

Collecting circumstances. Specimens were collected in rainforest, on Bunya Pines (*Araucaria*), by berlese extraction of litter, pyrethrum knockdown, and in flight intercept traps.

Etymology. The name honours the collector of this and a multitude of other new ground beetles throughout Queensland, G. B. Monteith.

Relationships. Very closely related to *L. foveipennis*, spec. nov. that lives in the same area.

Uncertain species

Lebia basipunctata Motschulsky

Lebia basipunctata Motschulsky, 1864: 227; Csiki 1932: 1325; Moore et al. 1987: 308; Lorenz 1998: 456.

Note. This species is rather enigmatic. It was enumerated by Motschulsky as *Lebia basipunctata* Chaudoir, from an unknown locality, in a key, but without any other information. The types should be deposited in Museum national de l'Histoire Naturelle, Paris, but could not be found there when I recently looked for them. In his catalogue, Moore (Moore et al. 1987: 308) mentioned it as a *nomen nudum*, and since Motschulsky's "description" no records of the species are known. I believe that Moore's opinion is appropriate and thus, this species is omitted from the key below.

Recognition

Certainly, it is far outside of the scope of the present work to give a key to all south Asiatic species of the genus *Lebia*, hence the key is restricted to the species from New Guinea, the surrounding islands, the Bismarck Archipelago, Solomon Islands, and Australia. Because Darlington (1968) in his key to the *Lebia* of New Guinea noted and wrongly identified the Oriental *L. karenia* Bates, this species also is included in the key below, although it does not occur within the treated area. Two new species from Sulawesi are also included in the key.

Key to the species of the genus *Lebia* from Australia, New Guinea, New Britain, New Ireland, and Solomon Islands

1. Outer apical angles of elytra angulate 2.
 - Outer apical angles of elytra rounded 3.
2. Colour dark piceous; prothorax wider, c. 1.7× as wide as long, margins distinctly sinuate near basal angle; elytra <1.75× as wide as prothorax. Papua New Guinea *endynomena* Darlington
 - Colour reddish; prothorax narrower, c. 1.55× as wide as long, margins not or barely sinuate near basal angle; elytra >1.9× as wide as prothorax. Papua New Guinea *externa* Darlington
3. Elytra with conspicuous and well confined pattern 4.
 - Elytra without conspicuous and well confined pattern, at most with indefinite dark cloud 15.
4. Elytra light reddish, with wide, parallel, black longitudinal sutural band that occupies the four inner intervals and does not reach the apex. Australia *melanonota* Chaudoir
 - Elytral pattern different 5.
5. Elytra with black anchor-shaped mark, or dark with large yellow humeral and apical lunules or with dark sutural and isolate lateral stripes (Figs 22-26, 35-37) 6.
 - Elytral pattern different 12.
6. Elytra with black sutural stripe and an isolate spot on either elytron (Fig. 37). Northern Australia *sedlaceki*, spec. nov.
 - Elytra with black anchor-shaped mark, or dark with large humeral and apical lunules (Figs 22-26, 35, 36). India, Burma, Thailand, Sulawesi, New Guinea, Australia 7.



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Figs 22-30. Habitus (body lengths in brackets). 22. *Lebia karenia* Bates (6.8 mm). 23, 24. *L. darlingtoniana*, spec. nov. (7.3 and 7.7 mm). Different types of elytral pattern. 25. *L. brisbanensis*, spec. nov. 26. *L. fallaciosa*, spec. nov. (7.5 mm). 27. *L. australica*, nom. nov. (5.4 mm). 28. *L. gemina*, spec. nov. (5.6 mm). 29. *L. insularum* Darlington (7.1 mm). 30. *L. cordifer* Darlington (6.2 mm).



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Figs 31-39. Habitus (body lengths in brackets). 31. *L. novabritannica*, spec. nov. (5.2 mm). 32. *L. salomona*, spec. nov. (5.3 mm). 33. *L. permutata*, spec. nov. (6.3 mm). 34. *L. atripennis*, spec. nov. (4.5 mm). 35. *L. trivittata*, spec. nov. (5.5 mm). 36. *L. adusta*, spec. nov. (4.2 mm). 37. *L. sedlaceki*, spec. nov. (4.75 mm). 38. *L. foveipennis*, spec. nov. (7.5 mm). 39. *L. monteithi*, spec. nov. (9.1 mm).

7. Larger species, length >6.2 mm; dark sutural spot covering two or three intervals, spot markedly widened at base (Figs 22-26) 8.
- Smaller species, length <5.5 mm; dark sutural spot covering only the sutural interval, not widened at base (Figs 35, 36) 11.
8. Apex of dark elytral spot characteristically angulate, marginal pores encircled by a small reddish spot (Fig. 22); pronotum densely microreticulate, dull; aedeagus barely widened, with elongate, acute apex, internal sac with three small denticulate sclerites (Fig. 1). India, Burma, Thailand *karenia* Bates
- Apex of dark elytral spot not angulate, marginal pores unicolourous (Figs 23-26); pronotum barely microreticulate, shining; aedeagus widened in middle or near apex, with shorter, more obtuse apex, internal sac either without any denticulate sclerites (Fig. 4) or with sinuate denticulate band at bottom (Figs 2, 3). Sulawesi, New Guinea, Australia 9.
9. Apical spot of elytra larger, less oblique, or apex of elytra completely yellow; apical margin less sinuate (Figs 23-25); margin of pronotum narrower, surface less glossy; aedeagus widest near apex, internal sac at bottom with conspicuous, sinuate, denticulate band (Figs 2, 3) 10.
- Apical spot of elytra smaller, oblique, apex of elytra never completely yellow; apical margin more deeply sinuate (Fig. 26); margin of pronotum wider, surface glossier; aedeagus widest in middle, internal sac without any denticulate sclerites (Fig. 4). New Guinea *fallaciosa*, spec. nov.
10. Dark sutural spot and lateral margin completely separated (Fig. 25); aedeagus with more complexly sinuate denticulate band that extends to both sides (Fig. 3). Australia: southeastern Queensland *brisbanensis*, spec. nov.
- Dark sutural spot and lateral margin separated or not (Figs 23, 24); aedeagus with less complexly sinuate denticulate band that extends only to right side (Fig. 2). Sulawesi, New Guinea *darlingtoniana*, spec. nov.
11. Larger species, length usually >5 mm; colour pattern extensive and distinct (Fig. 35); antenna slightly longer, median antennomeres almost 2× as long as wide; aedeagus with two transverse, very densely denticulate sclerites in middle at bottom of internal sac, and another plate that is strongly sclerotized at its anterior margin (Fig. 18). Sulawesi *trivittata*, spec. nov.
- Smaller species, length usually <4.5 mm; colour pattern less extensive and more faded (Fig. 36); antenna slightly shorter, median antennomeres about 1.5× as long as wide; aedeagus without any sclerotized or denticulate plates in internal sac (Fig. 19). Sulawesi *adusta*, spec. nov.
12. Elytra testaceous with transverse dark spot 13.
- Elytra dark with light cordiform spot (Fig. 30); aedeagus with a transverse, densely denticulate, conspicuously sinuate, virtually uninterrupted sclerite (Fig. 11). New Guinea, northern Australia *cordifer* Darlington
13. Length >7 mm; elytra with wide, transverse, anteriorly and posteriorly serrate, blue band in middle that broadly attains the lateral margin. Australia *bicolor* (Sloane)
- Length <5.5 mm; elytra with large black spot. Distribution different 14.
14. Elytra with rather triangular, black spot in middle that does not attain the lateral margin (Fig. 31); pronotum slightly wider, ratio width/length >1.52; genital ring wider, remarkably widened towards apex (Fig. 13). New Britain *novabritannica*, spec. nov.
- Elytra either with wide black spot that broadly attains the lateral margin and with a narrow dark humeral stripe along 8th interval, or almost completely dark with light apex (Fig. 32); pronotum slightly narrower, ratio width/length <1.51; genital ring narrower, barely widened towards apex (Fig. 14). Bougainville, Solomon Islands *salomona*, spec. nov.
15. Colouration contrasting with light fore body and unicolourous dark elytra (Figs 29, 34) .. 16.
- Colouration not contrasting, either elytra unicolourous light, or with an indistinct, slightly darker cloud (Figs. 27, 28, 38, 39) 18.
16. Length >7 mm; pronotum wider, ratio width/length c. 1.8 (Figs 29, 45); aedeagus with a transverse, densely denticulate, conspicuously sinuate sclerite that is narrowly interrupted at bottom and at the upper right side of internal sac (Fig. 10). Islands east to Papua Peninsula, Papua New Guinea *insularum* Darlington
- Length <5 mm; pronotum narrower, ratio width/length c. 1.65 (Figs 34, 46); aedeagus either with a complexly coiled, very densely denticulate sclerite in middle of internal sac (Fig. 17), or with two transverse, very densely denticulate sclerites at bottom and another strongly sclerotized plate at left margin of internal sac (Fig. 12) 17.

17. Colour of elytra black; pronotum narrower, ratio width/length < 1.3 (Fig. 34); aedeagus with a complexly coiled, very densely denticulate sclerite in middle of internal sac (Fig. 17). New Ireland *atripennis*, spec. nov.
- Colour of elytra dark piceous; pronotum wider, ratio width/length > 1.35 (Fig. 46); aedeagus with two transverse, very densely denticulate sclerites at bottom and another strongly sclerotized plate at left margin of internal sac (Fig. 12). New Guinea *subglabra*, spec. nov.
18. 3rd and 5th intervals polysetose, setiferous punctures foveate, distinctly interrupting the intervals (Figs 38, 39) 19.
- Only 3rd interval bisetose, setiferous punctures fine, not interrupting the intervals 20.
19. Intervals evenly convex, without microreticulation; 3rd interval trisetose, 5th intervals bisetose, 7th interval asetose; basal angles of pronotum produced backwards (Fig. 38); aedeagus smaller, with wide, very densely denticulate, transverse band that is narrowly interrupted at left side of bottom of internal sac (Fig. 20). North-eastern Australia *foveipennis*, spec. nov.
- Intervals longitudinally impressed or even sulcate, with distinct microreticulation; 3rd, 5th, and 7th intervals multisetose; basal angles of pronotum not produced backwards (Fig. 39); aedeagus larger, with narrow, far less densely denticulate, transverse band that is widely interrupted at lower left side and at bottom of internal sac (Fig. 21). Northeastern Australia *monteithi*, spec. nov.
20. Pronotum and head not microreticulate (Figs 42, 43, 47) 21.
- Pronotum, and usually also head, perceptibly microreticulate (Figs 40, 41, 44, 46, 48, 49) ... 23.
21. Prothorax narrow, ratio width length < 1.35, not wider than head (Fig. 47); elytra with indistinct dark cloud on 2-3 inner intervals (Fig. 33); aedeagus with basally wide, remarkably triangular apex, internal sac with partly denticulate, folded plate in middle at roof (Fig. 15). Irian Jaya *permutata*, spec. nov.
- Prothorax wider, ratio width length < 1.5, wider than head (Figs 42, 43); elytra without dark cloud on 2-3 inner intervals, usually unicolorous, sometimes slightly darker than fore body (Fig. 28); aedeagus with narrowly triangular apex, internal sac with transverse, densely denticulate sclerite running either from the roof on the left side along right side to bottom (Fig. 7), or with a transverse, sinuate, at bottom distinctly interrupted, denticulate band (Fig. 8). New Guinea 22.
22. Prothorax narrower, barely wider than head (Fig. 42); usually slightly smaller species, length 4.5-5.2 mm; aedeagus delicate, with narrowly triangular, almost symmetrically situated apex, internal sac with transverse, densely denticulate sclerite running from the roof on the left side along the right side to bottom (Fig. 7). New Guinea, north-eastern Australia *papuella* Darlington
- Prothorax wider, considerably wider than head (Fig. 43); usually slightly larger species, length 4.8-6.0 mm; aedeagus compact, with narrow, elongate apex asymmetrically situated at right side, internal sac with a transverse, sinuate, denticulate band that is interrupted at bottom (Fig. 8). Papua New Guinea *gemina*, spec. nov.
23. Pronotum very wide in comparison to head, ratio width of pronotum/width of head 1.32, with remarkably incurved anterior angles (Fig. 49); elytra shorter and wider, ratio length/width 1.66; aedeagus small with rather elongate, at tip rounded apex, internal sac with two remarkably coiled, densely denticulate sclerites in middle (Fig. 16). North-eastern Australia *laticollis*, spec. nov.
- Pronotum narrower in comparison with head, ratio width of pronotum/width of head < 1.25, with less widely incurved anterior angles (Figs 40, 41, 44, 46, 48); elytra longer and narrower, ratio length/width > 1.78; aedeagus different (Figs 5, 6, 9, 12) 24.
24. Microreticulation of head distinct and complete; pronotum wide and rather incurved towards apex (Fig. 44); aedeagus with wide, obtuse apex, internal sac with many dentiform sclerites (Fig. 9). New Guinea *barda* Darlington
- Microreticulation of head superficial and incomplete; pronotum commonly narrower, always less incurved towards apex (Figs 40, 41, 46, 48); internal sac of aedeagus with a transverse, sinuate, denticulate band (Figs 5, 6), or with two denticulate sclerites in middle at bottom (Fig. 12), or unknown 25.
25. Microreticulation of pronotum rather superficial (Fig. 46); elytra either unicolorous reddish or with large, slightly darker cloud; aedeagus with basally wide, symmetric, triangular apex, internal sac with two transverse, very densely denticulate sclerites at bottom and another strongly sclerotized plate at its left margin (Fig. 12). New Guinea *subglabra*, spec. nov.

- Microreticulation of pronotum very distinct (Figs 40, 41, 48); elytra unicolourous reddish; aedeagus with narrow, elongate apex asymmetrically situated at right side, internal sac with a transverse, sinuate, denticulate band (Figs 5, 6), or unknown 26.
- 26. Pronotum narrower, ratio width/length 1.50 (Fig. 48); elytra shorter and wider, ratio length/width 1.30; aedeagus unknown. Salawati Island, west of Irian Jaya *inornata*, spec. nov.
- Pronotum wider, ratio width/length > 1.52, commonly wider (Figs 40, 41) (if ratio under 1.55, then from central eastern Queensland); elytra longer and narrower, ratio length/width > 1.35; aedeagus with narrow, elongate apex asymmetrically situated at right side, internal sac with a transverse, sinuate, denticulate band (Figs 5, 6) 27.
- 27. Larger species, body length 6.2 mm; pronotum wider, ratio width/length 1.38 (Fig. 40); internal sac of aedeagus with a transverse, sinuate, uninterrupted, denticulate band (Fig. 5). Papua New Guinea *papuensis* Macleay
- Smaller species, body length < 5.6 mm; pronotum narrower, ratio width/length < 1.35 (Fig. 41); internal sac of aedeagus with a transverse, sinuate, at bottom distinctly interrupted, denticulate band (Fig. 6). central eastern and southeastern Queensland *australiana*, nom. nov.

Remarks

Although the number of species is increased substantially in this paper, it must be noted that few species only are available in sufficient numbers, whereas of several species only the holotype is known, or they are so far recorded only from the type locality. As mentioned above, this may be mainly due to the habitat that most species prefer, namely the canopy of rain forest, or at least branches and leaves of trees in dense forest. Therefore, many species are best sampled by canopy fogging or beating, and this may apply in particular to the small species of the *papuensis*-group. In view of the very few fogging surveys that have been carried out so far in the rain forests of New Guinea and Australia, not to speak from New Britain, New Ireland and additional islands to the east and southeast of New Guinea, the number of species may be substantially increased in future as such surveys are intensified and carried out at additional localities. The large numbers of *L. papuella* and *L. gemina* collected at Baiteta (Papua New Guinea), and those of *L. australica* at certain

localities in eastern Queensland demonstrate that those small *Lebia*'s may be quite common where they occur. Certain species also may be fogged from the bark of standing trees, as for example the fine series of *L. monteithi* in northern Queensland.

Even with the additional new species, the genus *Lebia* in the Papuan-Australian area evidently is becoming less speciose and is reaching its eastern limits. Australia, however, is unique for the occurrence of some conspicuous species, e.g. of the *foveipennis*-lineage which is unknown elsewhere. Even more striking is the existence – and on Mt. Fisher even the coexistence – of two closely related species of this group, which means that this lineage should be a rather old endemic element of the Australian fauna. The other Australian species, except for the likewise unique *L. bicolor* and *L. melanonota*, apparently immigrated rather recently and probably they all came from New Guinea. *L. papuella* and *L. cordifer* even seem to be very young immigrants, because they do not seem to have passed through any morphological change or taxonomic diversification in Australia.

Remarkably enough is the repeated sympatric and probably also syntopic coexistence of two or even three externally similar, extremely closely related species at certain localities that are only distinguished by their differently shaped and structured male aedeagi. This is true for *L. papuella* and *L. gemina* at Baiteta (New Guinea), for *L. trivittata* and *L. adusta* at Hogg's Back (Sulawesi), and for *L. foveipennis* and *L. monteithi* at Mt. Fisher (Queensland). At all localities specimens of either species were collected at the same date and by the same sampling method which means that they most probably live at the same time on the same spot. Similar coexistence may likewise occur in other species in and outside of the region mentioned in this paper. This raises questions as to which factors inhibit cross-breeding, or as to competition for food between so extremely similarly shaped and closely related species.

Checklist of the species of the genus *Lebia* of the Papuan-Australian region

<i>adusta</i> , spec. nov.	Sulawesi
<i>atripennis</i> , spec. nov.	New Ireland
<i>australiana</i> , spec. nov.	Australia: e. Queensland
<i>barda</i> Darlington	New Guinea
<i>bicolor</i> (Sloane)	Australia
<i>brisbanensis</i> , spec. nov.	Australia: se. Queensland
<i>cordifer</i> Darlington	c. New Guinea, n. Australia
<i>darlingtoniana</i> , spec. nov.	Sulawesi, New Guinea
<i>endynomena</i> Darlington	e. New Guinea
<i>externa</i> Darlington	e. New Guinea
<i>fallaciosa</i> , spec. nov.	New Guinea



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48



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Figs 40-49. Pronotum. 40. *Lebia papuensis* Macleay. 41. *L. australica*, nom. nov. 42. *L. papuella* Darlington. 43. *L. gemina*, spec. nov. 44. *L. barda* Darlington. 45. *L. insularum* Darlington. 46. *L. subglabra*, spec. nov. 47. *L. permutata*, spec. nov. 48. *L. inornata*, spec. nov. 49. *L. laticollis*, spec. nov.

foveipennis, spec. nov. Australia: ne. Queensland
gemina, spec. nov. e. New Guinea
inornata, spec. nov. w. New Guinea: Salawati Is.
insularum Darlington e. New Guinea: Normanby Is,
 Rossel Is.
laticollis, spec. nov. Australia: e. Queensland
melanonota Chaudoir n. Australia
monteithi, spec. nov. Australia: ne. Queensland
novabritannica, spec. nov. New Britain
papuella Darlington New Guinea, Australia: ne.
 Queensland
papuensis Macleay se. New Guinea
permutata, spec. nov. w. New Guinea
salomona, spec. nov. Solomon islands: Bougainville
sedlaceki, spec. nov. Australia: ne. Queensland
subglabra, spec. nov. w. New Guinea
trivittata, spec. nov. Sulawesi

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